



La rééducation de l'épaule

Où en sommes-nous actuellement?

Mon parcours



2016 - 2021
Doctorat
Ughent
(Ann Cools)

2022- ...
Recherche
Padel
(UGhent)

2024 - ...
Wallonia
Surgery
Institute



2007- ...
Cabinet
libéral

2005
Licence

2005-2007
HEGP Paris

2011- ...
Vinci-
Bruxelles



Ce que le cours ne traite pas...



Plan du cours

Rappels sur l'épaule

Examen **clinique et différentiel** de l'épaule

Prise en charge des **tendinopathies** de la coiffe, des **ruptures** non opérées et opérées

Prise en charge des **prothèses**



Prise en charge des **instabilités** de l'épaule non opérées et opérées

Prise en charge de **l'épaule gelée**

Evaluation des **facteurs de risques & Critères RTS**



Rappels

Shoulder pain: can one label satisfy everyone and everything?

Ann M Cools,¹ Lori A Michener²

Dr. Charles Neer
« Syndrome conflit sous-acromial »
1972

Conflit structurel dans l'espace sous-acromial

Conflit en lien avec des douleurs d'épaule

Cluster de symptômes au lieu d'un diagnostic pathoanatomique

- *Subacromial pain syndrome*
- *rotator cuff related shoulder pain*

- Douleur que en lien avec l'espace sous-acromial
- Pas toujours que la coiffe

Antero-lateral shoulder pain?



Internal impingement in the tennis player: rehabilitation guidelines

A M Cools,¹ G Declercq,² B Cagnie,¹ D Cambier,¹ E Witvrouw¹

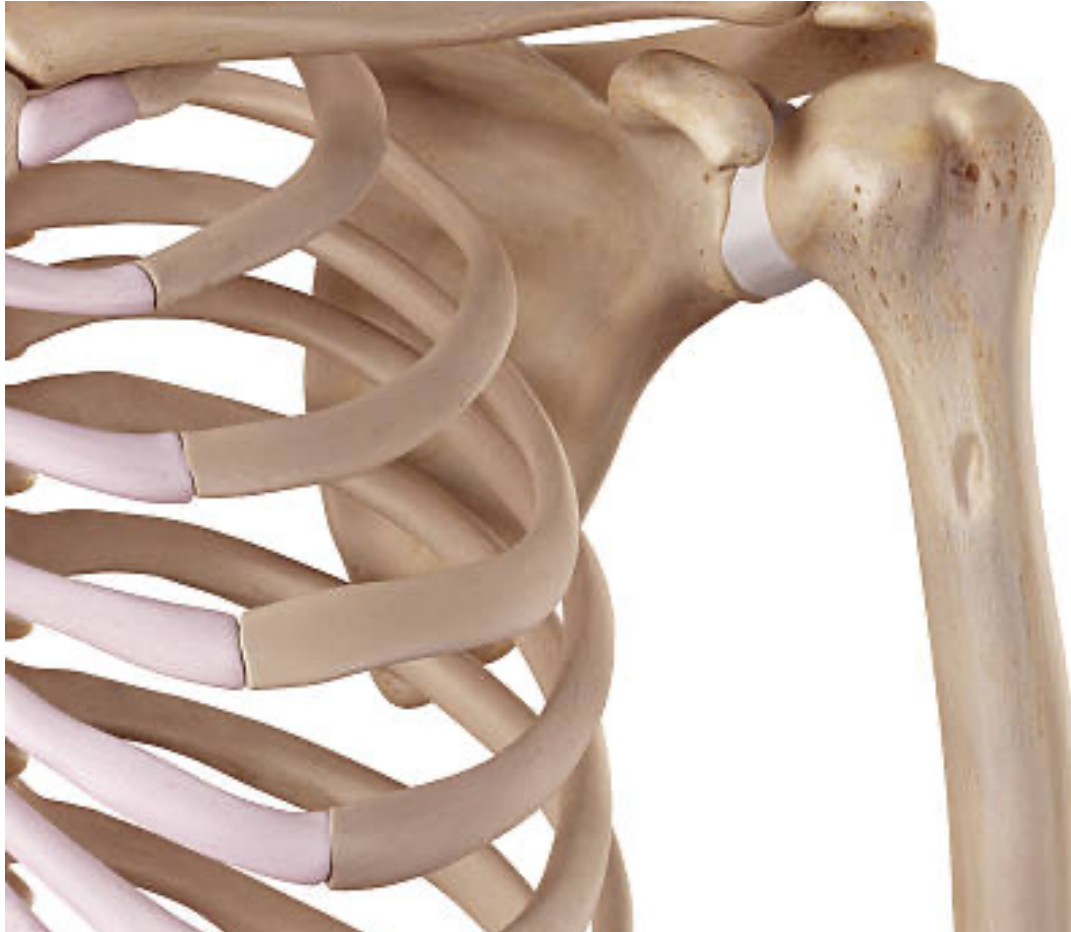
Research indicates that shoulder impingement is **the most common cause of shoulder pain in overhead athletes.**

In recent literature, impingement has been described as a **group of symptoms rather than a specific diagnosis.**

(...) it is thought that numerous underlying pathologies may cause impingement symptoms. **Glenohumeral instability, rotator cuff or biceps pathology**, scapular **dyskinesis**, and **glenohumeral internal rotation deficit** have been associated with impingement symptoms in clinical literature.



Mécanismes associés avec les douleurs d'épaule



Conflit structurel

Conflit fonctionnel

Conflit structurel



Diminution de l'espace sous-acromial

- Acromion type II ou III
- Calcifications
- Osteophytes
-

Cependant, souvent peu de lien de corrélation entre ces changements structuraux et la douleur.

Conflit structurel

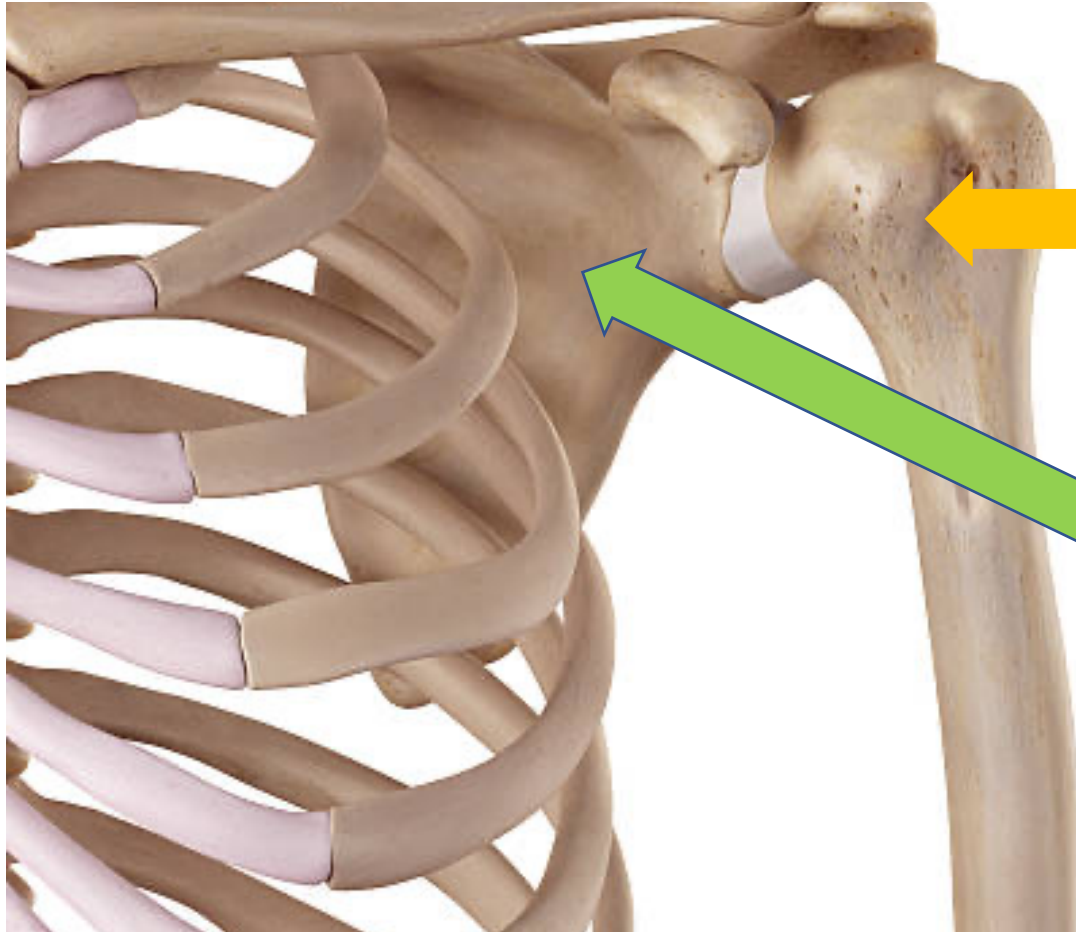
91% RC tears occurred on the inferior (joint) side of the tendon, 9% on the bursal side
(n=43) (Payne et al,1997)

82% of tears were joint side or intratendinous and 28% on bursal side
(n=33) (Fukuda et al,1987)

from a 126 intraoperative investigations of the RC, 76% had articular side tears,14% bursal side and 10% both. (Ellman,1990)

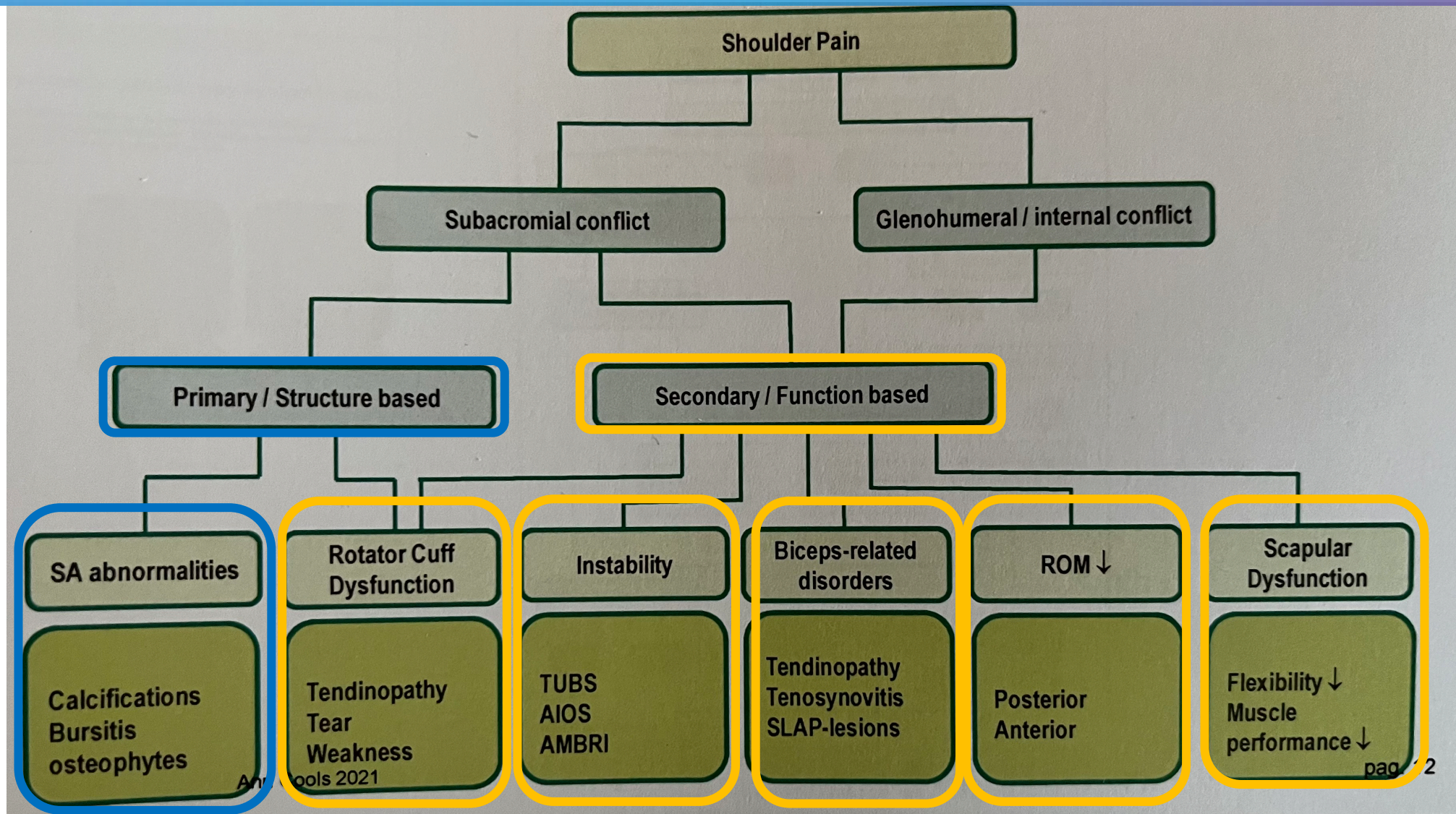
poor correlation between acromion shape and symptoms (Gill et al,2002;Woorland et al,2003;Snow et al,2009)

Conflit fonctionnel



Translation excessive de la tête humérale

Manque de stabilité et/ou mobilité scapulaire



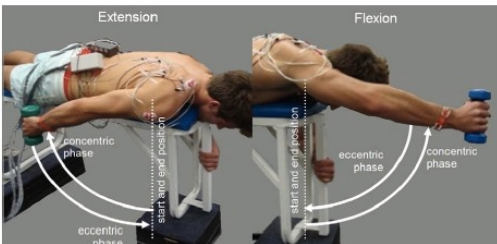
Scapula et la coiffe des rotateurs



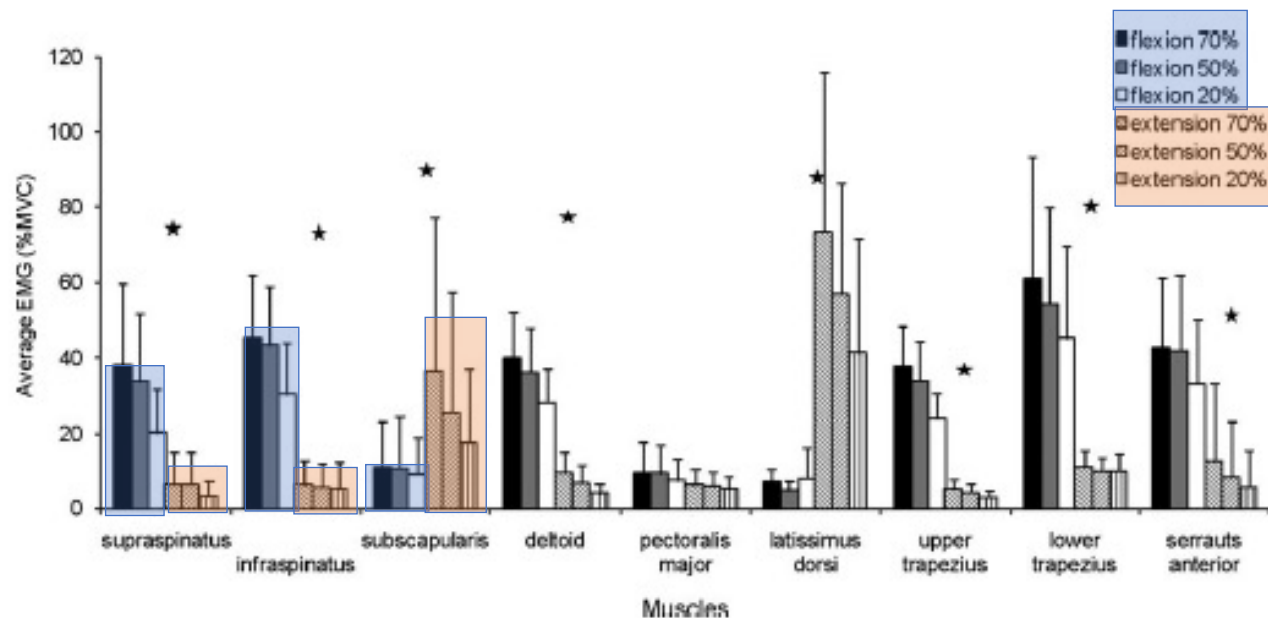
La coiffe des rotateurs

- ❑ Stabiliser / Pré- activation
- ❑ Activation préférentielle
- ❑ Mobiliser/ production force





D. Wattanaprakornkul et al. / Journal of Science and Medicine in Sport 14 (2011) 376–382



5. Conclusion

During shoulder flexion and extension, the RC muscles are recruited in a direction specific manner under all load conditions to prevent potential antero-posterior humeral head translation caused by flexion and extension torque producing muscles.



Available online at www.sciencedirect.com

ScienceDirect

Journal of Science and Medicine in Sport 14 (2011) 376–382

Journal of
Science and
Medicine in
Sport

www.elsevier.com/locate/jams

Original research

The rotator cuff muscles have a direction specific recruitment pattern during shoulder flexion and extension exercises

Duangjai Wattanaprakornkul^a, Ian Cathers^b, Mark Halaki^b, Karen A. Ginn^{a,*}

^a Discipline of Biomedical Science, Sydney Medical School, The University of Sydney, Australia

^b Discipline of Exercise and Sport Science, Faculty of Health Sciences, The University of Sydney, Australia

Received 25 October 2010; received in revised form 30 November 2010; accepted 20 January 2011

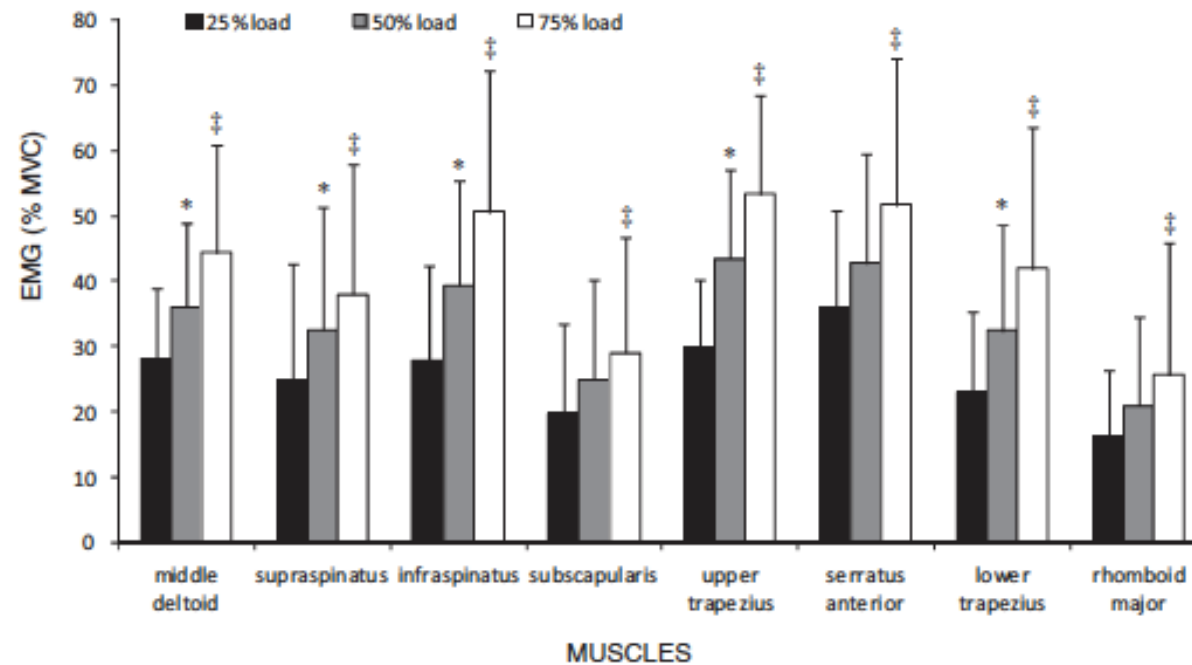


Original research

Does load influence shoulder muscle recruitment patterns during scapular plane abduction?

Darren Reed^{a,*}, Ian Cathers^a, Mark Halaki^b, Karen A. Ginn^a

^aDiscipline of Biomedical Science, School of Medical Sciences, Sydney Medical School, The University of Sydney, Australia
^bDiscipline of Exercise and Sport Science, Faculty of Health Sciences, The University of Sydney, Australia



Augmentation de la charge → augmentation du niveau d'activation de tous les muscles

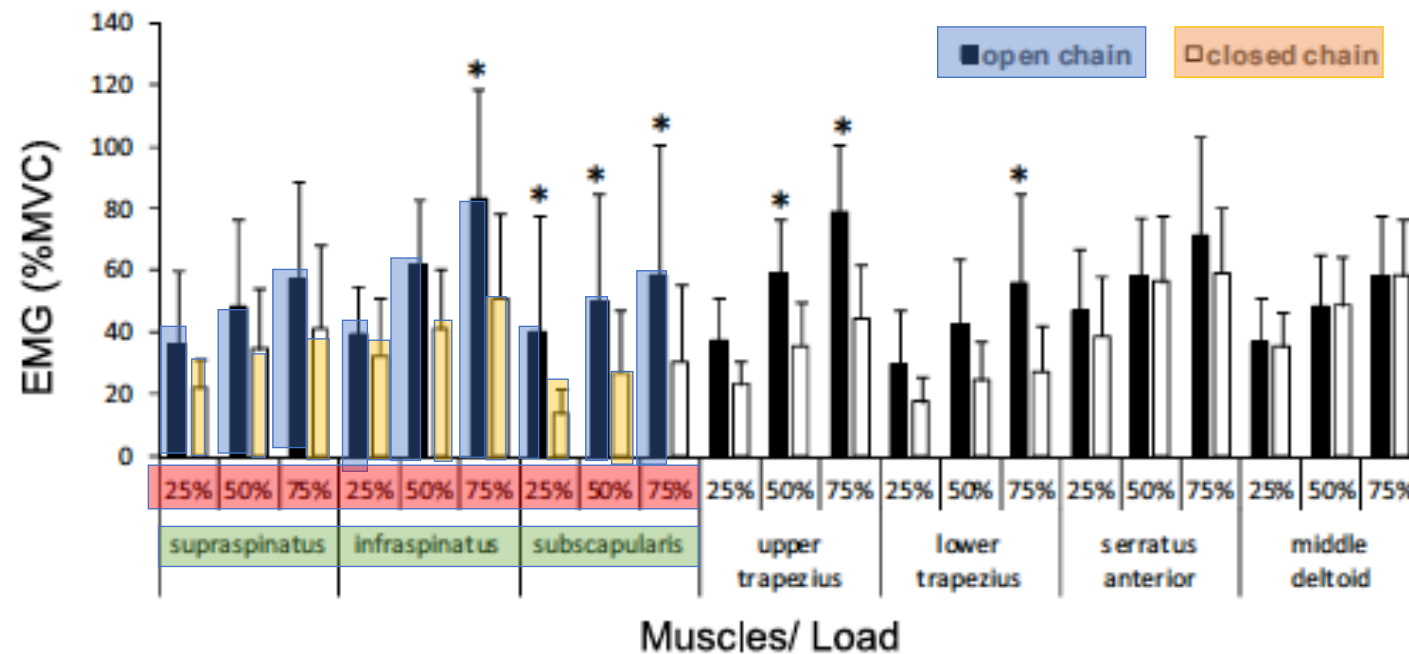
Original research

Shoulder muscle activation patterns and levels differ between open and closed-chain abduction

Darren Reed^{a,*}, Ian Cathers^{a,b}, Mark Halaki^c, Karen A. Ginn^a

^aMedical Sciences, Sydney Medical School, The University of Sydney, Australia
^bSchool of Health Sciences, The University of Sydney, Australia

D. Reed et al. / Journal of Science and Medicine in Sport xxx (2017) xxx–xxx



Conclusions: Open-chain abduction is required to facilitate the stabilising role of the rotator cuff and axio-scapular muscles, in response to middle deltoid activity. Closed-chain exercises may enable full range shoulder abduction earlier in rehabilitation programs, with an inherent stability and less demand on the rotator cuff.

ORIGINAL COMMUNICATION

Rotator Cuff Muscles Perform Different Functional Roles During Shoulder External Rotation Exercises

DANIEL T. TARDO,¹ MARK HALAKI,¹ IAN CATHERS,² AND KAREN A. GINN^{2*}

¹Discipline of Exercise and Sport Science, Faculty of Health Sciences, The University of Sydney, Sydney, New South Wales, Australia

²Discipline of Biomedical Science, Sydney Medical School, The University of Sydney, Sydney, New South Wales, Australia

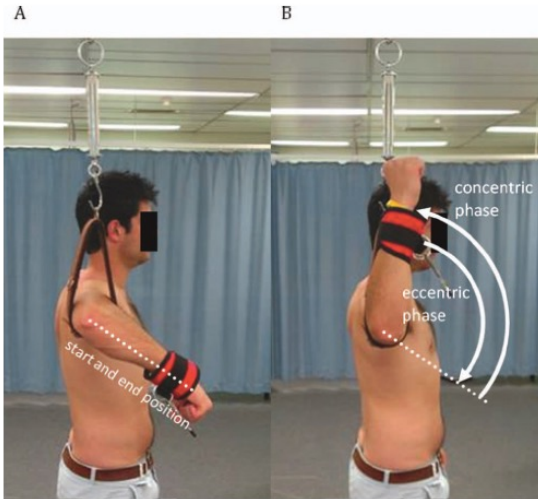
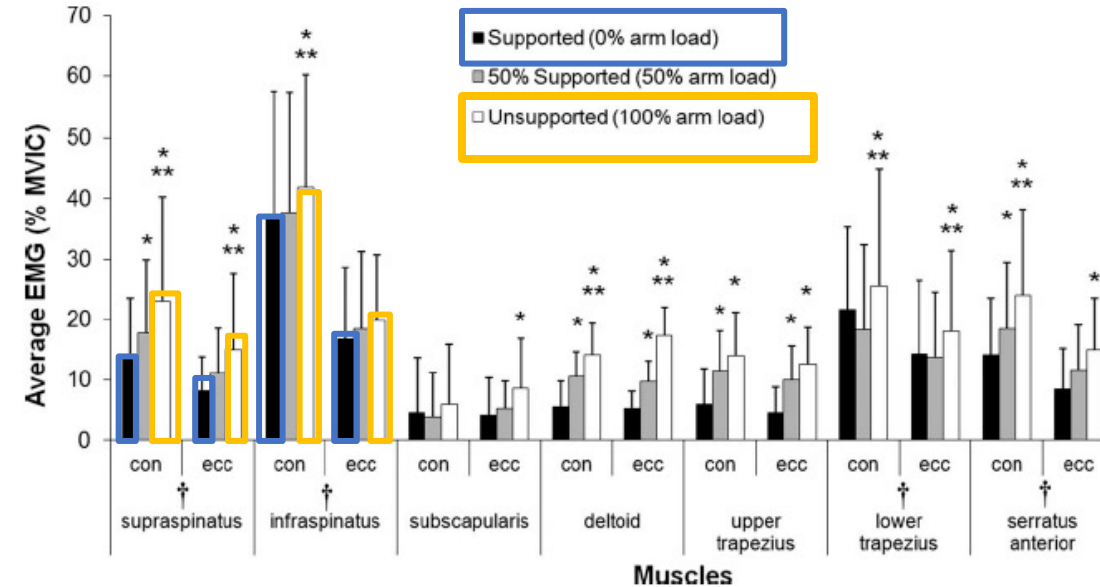


Fig. 1. The external rotation exercise performed with the shoulder in midrange abduction. A: Start and end positions. B: Concentric and eccentric phases shown.

IS -> Rotation externe
 SS -> Rôle de stabilisateur
 SubsScap-> faible contribution à la stabilité articulaire en RE

4 Tardo et al.



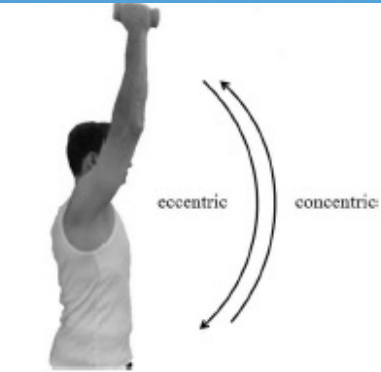


Fig. 1. Full range shoulder flexion in sagittal plane.

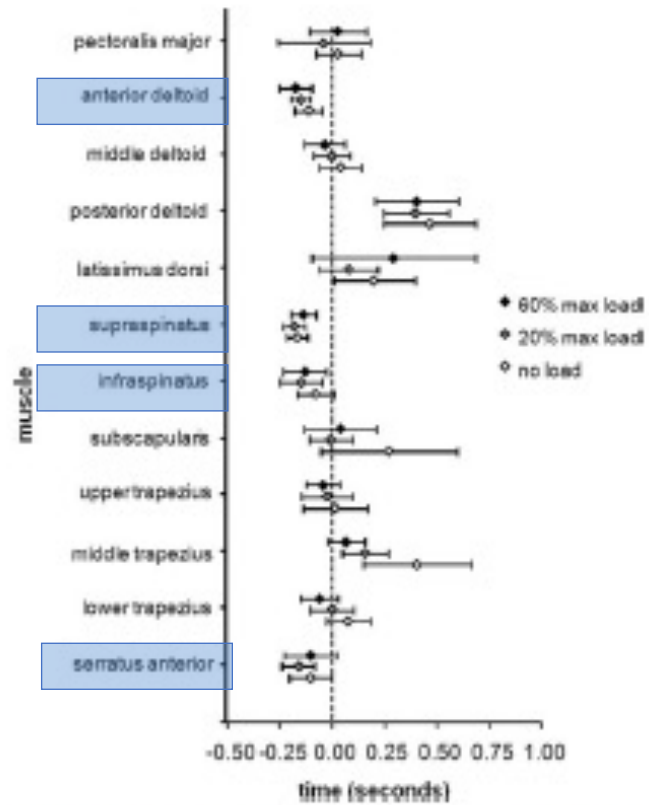


Fig. 4. The average ($\pm 95\%$ confidence intervals) time of onset of activity in the 12 muscle sites examined from the onset of the flexion movement (0 sec) performed with no load and at 20 and 60% of maximum load.

ORIGINAL COMMUNICATION

A Comprehensive Analysis of Muscle Recruitment Patterns During Shoulder Flexion: An Electromyographic Study

DUANGJAI WATTANAPRAKORNKUL,¹ MARK HALAKI,² CRAIG BOETTCHER,¹ IAN CATHERS,² AND KAREN A. GINN^{1,*}

¹Discipline of Biomedical Science, School of Medical Sciences, Sydney Medical School, The University of Sydney, Sydney, Australia

²Discipline of Exercise and Sport Science, Faculty of Health Sciences, The University of Sydney, Sydney, Australia

622 Wattanaprakornkul et al.

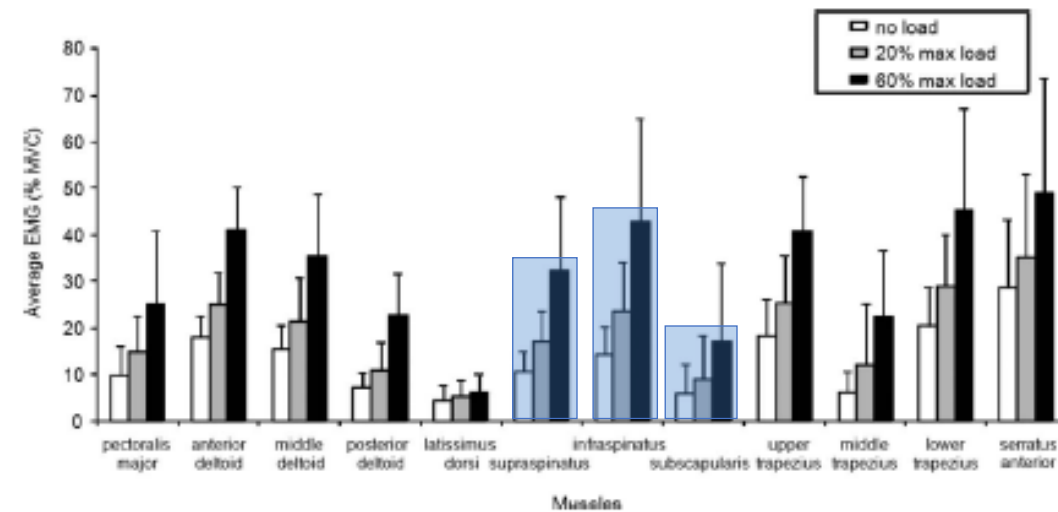


Fig. 2. The average ($\pm$ SD) EMG levels (%MVC) of the 12 muscle sites examined during full range flexion performed in the sagittal plane with no load, 20 and 60% of maximum load.

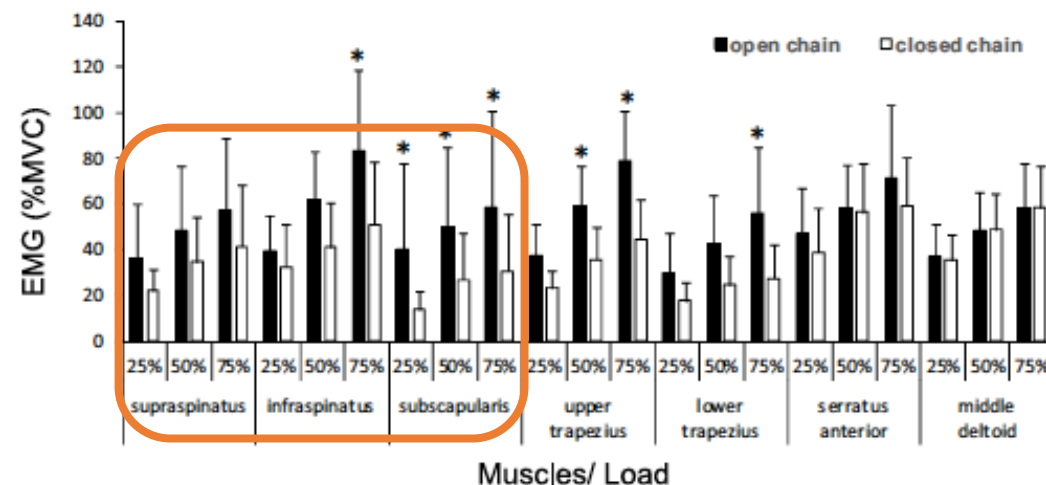


Fig. 1. Average ($\pm$ SD) normalised EMG activation levels (%MVC) of the seven muscles tested during the concentric closed-chain shoulder press exercise and open-chain abduction (40° – 140°) at 25%, 50% and 75% loads. * indicates significantly higher activation levels during open-chain abduction than the closed-chain shoulder press.

Conclusions: Open-chain abduction is required to facilitate the stabilising role of the rotator cuff and axio-shoulder muscles, in response to middle deltoid activity. Closed-chain exercises may enable full range shoulder abduction earlier in rehabilitation programs, with an inherent stability and less demand on the rotator cuff.

The ‘empty can’ and ‘full can’ tests do not selectively activate supraspinatus

Craig E. Boettcher^{a,*}, Karen A. Ginn^a, Ian Cuthers^b

^a Discipline of Biomedical Science, Faculty of Medicine, The University of Sydney, Australia

^b Faculty of Health Sciences, The University of Sydney, Australia

Received 26 June 2008; received in revised form 28 August 2008; accepted 1 September 2008



EC-> 9 muscles (activation élevée)
FC-> 8 muscles (activation élevée)
EC and FC comme exercices de renforcement?

Fig. 1. Illustration of the “empty can” (EC) test (a) and “full can” (FC) test (b).

Implications cliniques



- ❑ Réaliser des exercices en flexion et en extension permet de **recruter la partie antérieure et postérieure de la coiffe** comme réaliser des exercices de rotation interne et rotation externe.
- ❑ Les exercices en flexion et extension peuvent être considérés comme des **exercices de stabilisation** et les exercices de rotation comme des exercices pour travailler **le rôle rotatoire** de la coiffe.
- ❑ Infra-épineux -> Rotation externe
- ❑ Supra -épineux -> Rôle de stabilisateur si on travaille sans soutien du bras

Arguments en faveur des rotateurs externes

> [J Shoulder Elbow Surg.](#) 2006 May-Jun;15(3):319-23. doi: 10.1016/j.jse.2005.08.017.

Subacromial pressures in vivo and effects of selective experimental suprascapular nerve block

Clément M L Werner ¹, Stephan Blumenthal, Armin Curt, Christian Gerber

The effect of five isometric exercises on glenohumeral translations in healthy subjects and patients with the hypermobility type of the ehlers-danlos syndrome (heds) or hypermobility spectrum disorder (hsd) with multidirectional shoulder instability: an observational study

Valentien Spanhove ¹, Inge De Wandele ², Birgitte Hougs Kjær ³, Fransiska Malfait ⁴, Fran Vanderstukken ⁵, Ann Cools ⁵

L'espace sous-acromial augmente pendant la **contraction isométrique et dynamique en RE.**
Diminue lors des autres mouvements isométriques ou dynamiques (extension épaule et coude, flexion épaule, rotation interne).

Reduced glenohumeral rotation, external rotation weakness and scapular dyskinesis are risk factors for shoulder injuries among elite male handball players: a prospective cohort study

Benjamin Clarsen, Roald Bahr, Stig Haugsboe Andersson, Rikke Munk, Grethe Myklebust

Risk factors for, and prevention of, shoulder injuries in overhead sports: a systematic review with best-evidence synthesis

Martin Asker, ^{1,2} Hannah L Brooke, ³ Markus Waldén, ^{4,5,6} Ulrika Tranaeus, ^{1,7} Fredrik Johansson, ^{1,2} Eva Skillgate, ^{1,2} Lena W Holm ^{1,3}

REVIEW PAPER

Open

Risk factors and prevention strategies for shoulder injuries in overhead sports: an updated systematic review

Matthias Wilhelm Hoppe ¹, Joana Brochagen ¹, Thomas Tischer ^{2,3}, Knut Beitzel ⁴, Romain Seil ⁵ and Casper Grim ^{6,7}

Handball load and shoulder injury rate: a 31-week cohort study of 679 elite youth handball players

M Møller, ¹ R O Nielsen, ¹ J Attermann, ² N Wedderkopp, ³ M Lind, ⁴ H Sørensen, ¹ G Myklebust ⁵

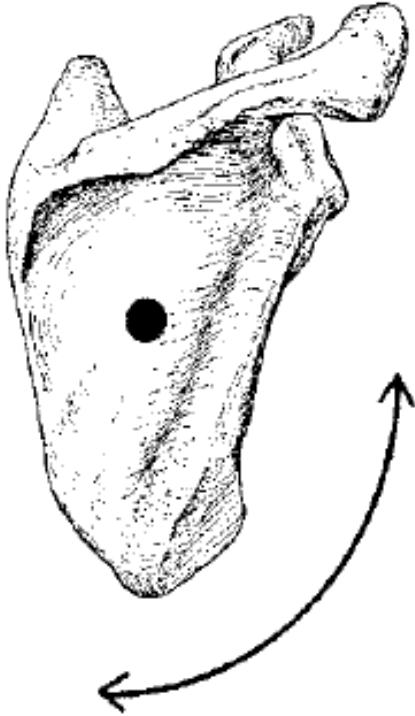
Facteur de risque dans l'apparition des blessures d'épaule



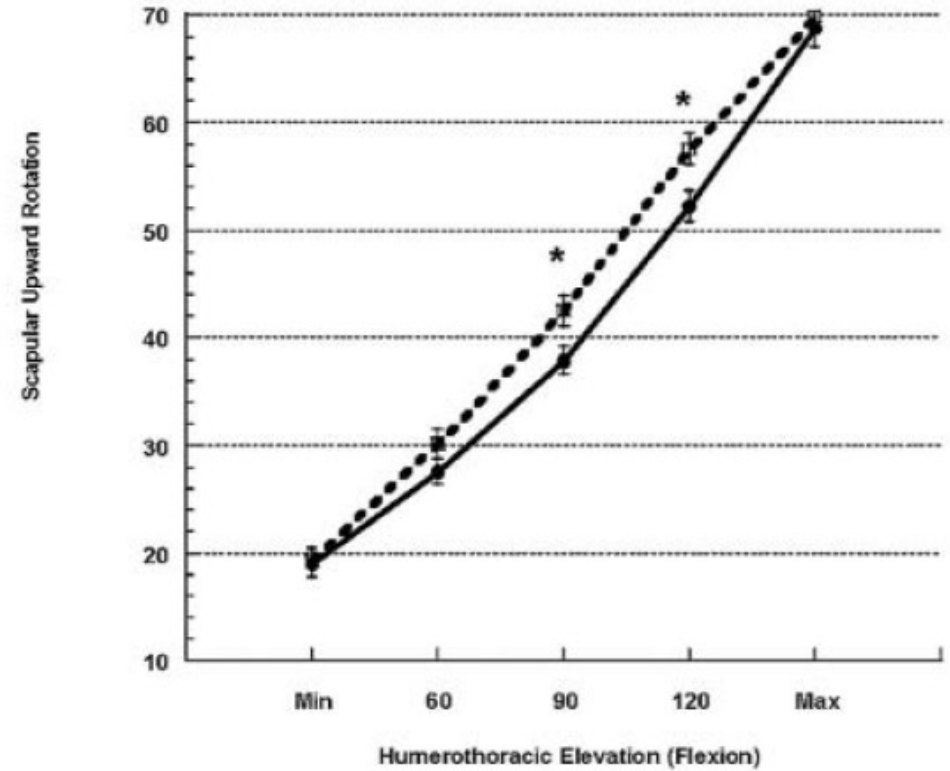
La Scapula



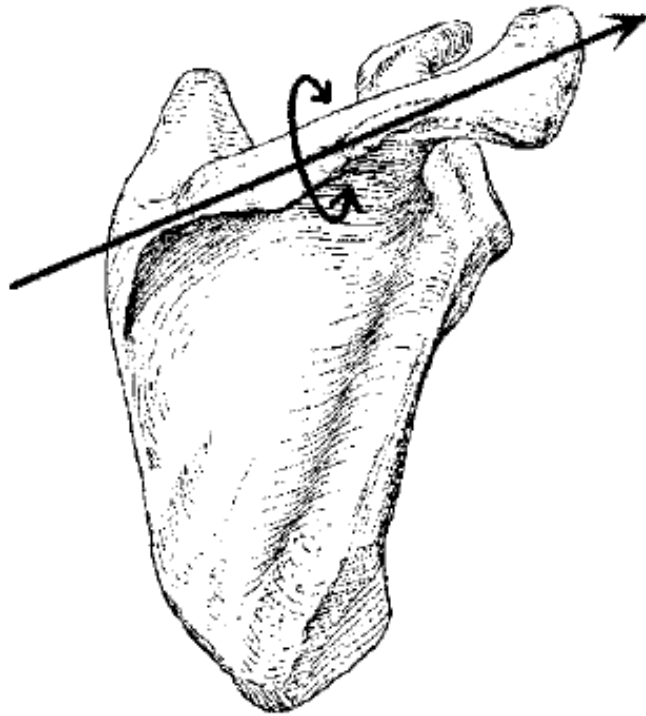
Cinématique scapulaire



Axis of rotation: Sagittal

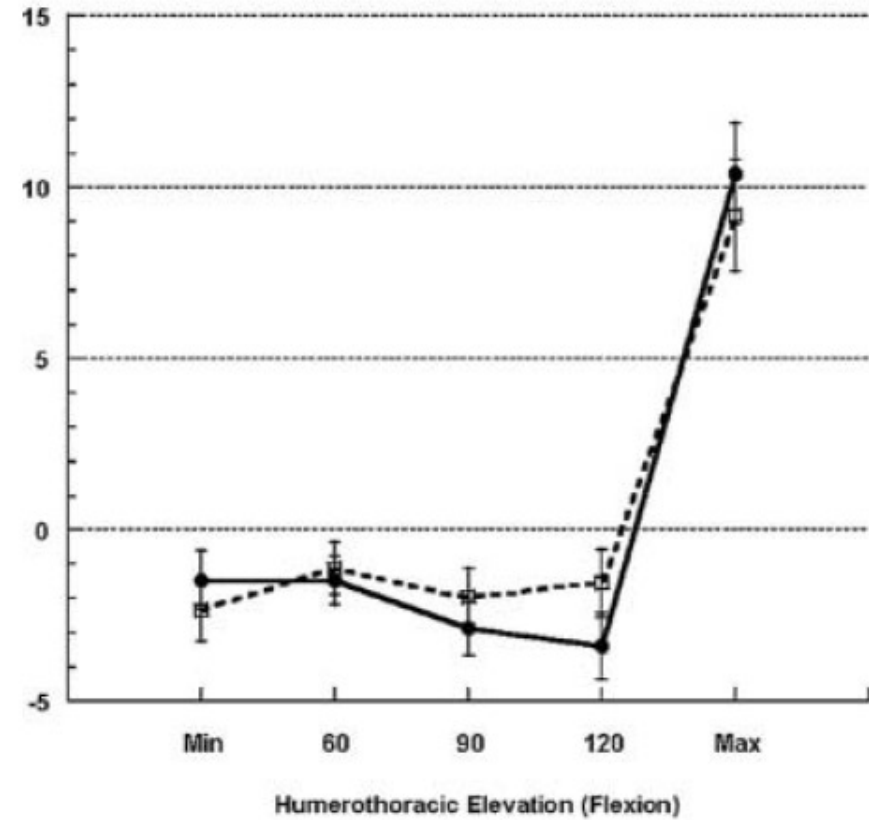


Downward - upward rotation



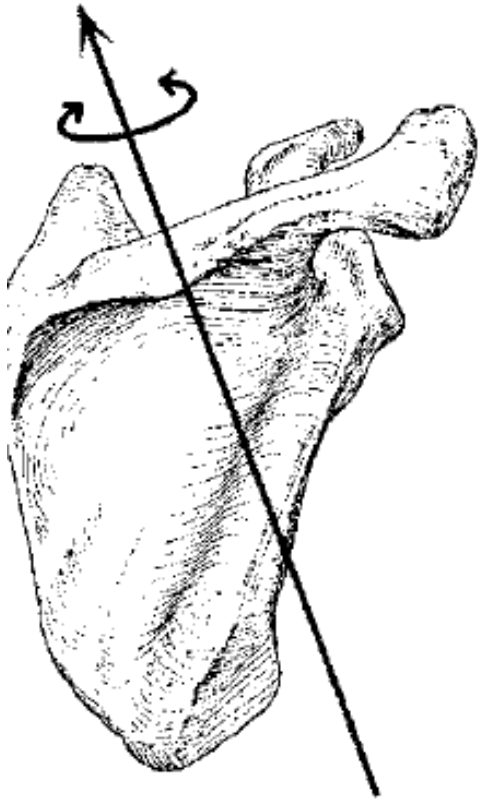
Axis of rotation:Horizontal

Scapular Posterior Tilt

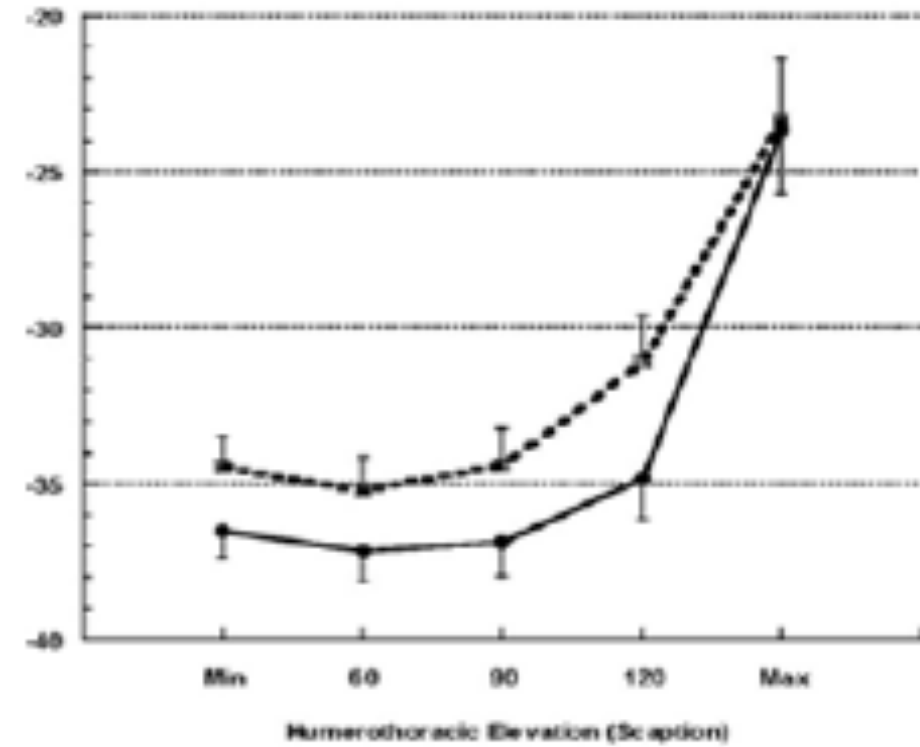


Posterior - anterior tilt

McClure et al 2006



Axis of rotation: Vertical



Internal - external rotation

McClure et al 2006

The Association of Scapular Kinematics and Glenohumeral Joint Pathologies

TABLE 2

SUMMARY OF SCAPULAR KINEMATICS DURING ARM ELEVATION IN HEALTHY AND PATHOLOGIC STATES

Group	Healthy	Impingement or Rotator Cuff Disease	Glenohumeral Joint Instability	Adhesive Capsulitis
Primary scapular motion	Upward rotation	Lesser upward rotation	Lesser upward rotation	Greater upward rotation
Secondary scapular motion	Posterior tilting	Lesser posterior tilting	No consistent evidence for alteration	No consistent evidence for alteration
Accessory scapular motion	Variable internal/external rotation	Greater internal rotation	Greater internal rotation	No consistent evidence for alteration
Presumed implications	Maximize shoulder range of motion and available subacromial space	Presumed contributory to subacromial or internal impingement	Presumed contributory to lesser inferior and anterior joint stability	Presumed compensatory to minimize functional shoulder range-of-motion loss

Rôles de l'activité musculaire

PAULA M. LUDEWIG, PT, PhD¹ • JONATHAN F. REYNOLDS, PT, PhD²

The Association of Scapular Kinematics and Glenohumeral Joint Pathologies

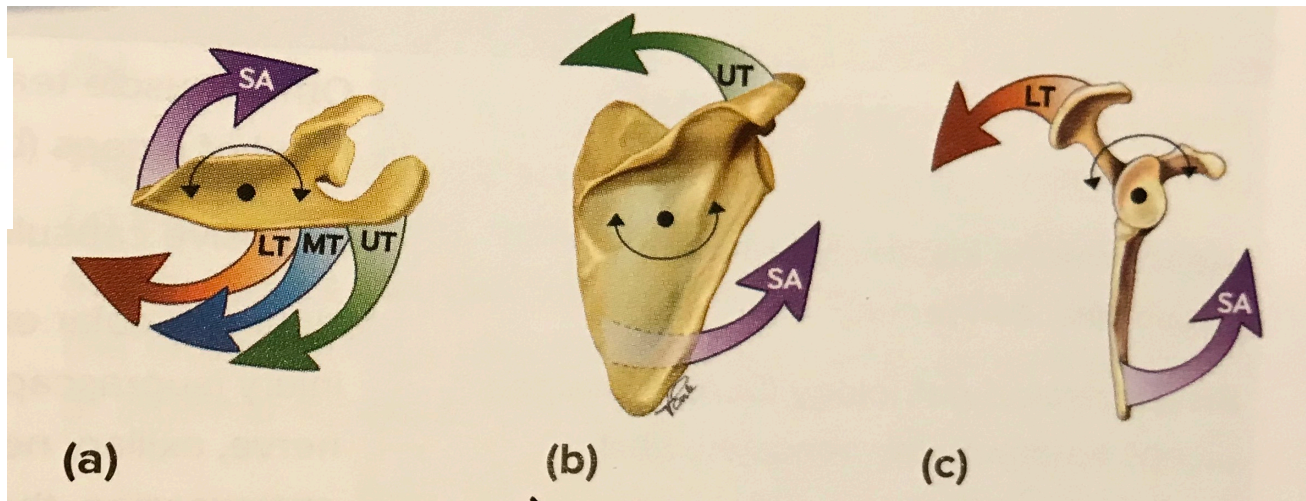


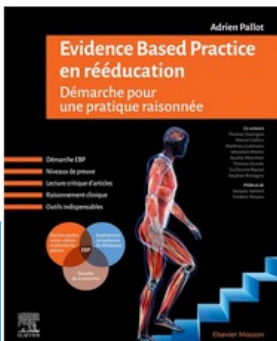
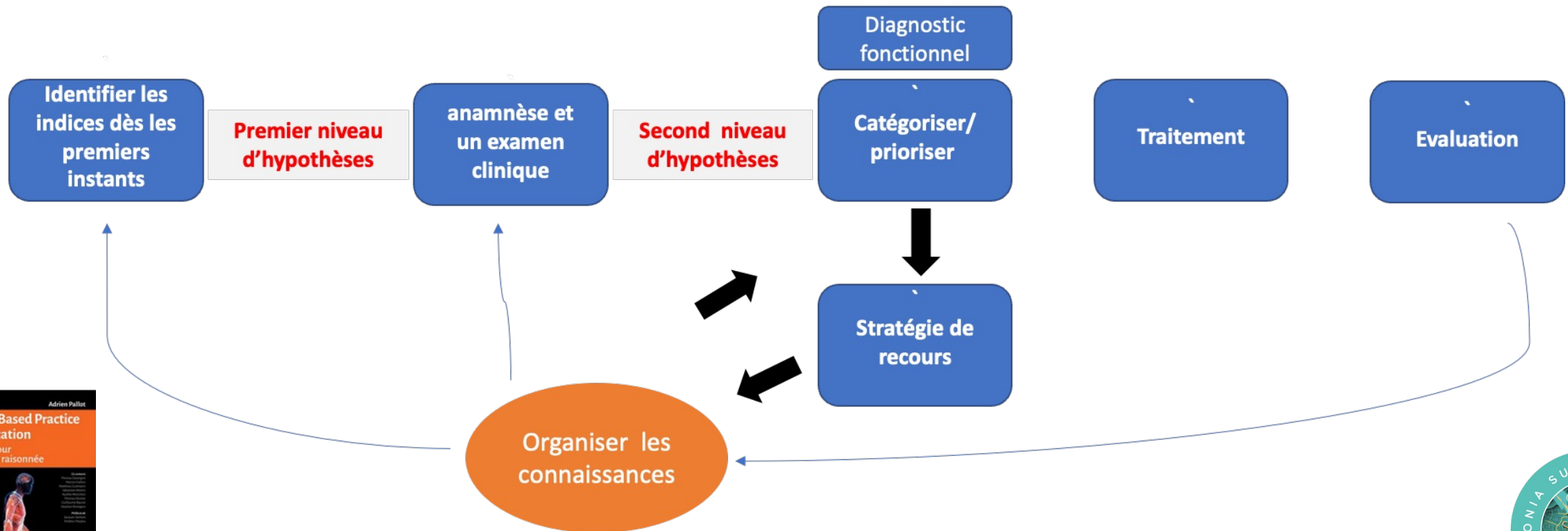
TABLE 3

PROPOSED BIOMECHANICAL MECHANISMS OF SCAPULAR KINEMATIC DEVIATIONS

Mechanism	Associated Effects
Inadequate serratus activation	Lesser scapular upward rotation and posterior tilt
Excess upper trapezius activation	Greater clavicular elevation
Pectoralis minor tightness	Greater scapular internal rotation and anterior tilt
Posterior glenohumeral joint soft tissue tightness	Greater scapular anterior tilt
Thoracic kyphosis or flexed posture	Greater scapular internal rotation and anterior tilt, lesser scapular upward rotation

Examen clinique de l'épaule

Raisonnement clinique





Imagerie



54% des personnes asymptomatiques (IRM) de plus de 60 ans présentent une rupture partielle ou full thickness de la coiffe

A l'échographie, **96%** des sujets asymptomatiques présentent des signes de tendinopathie et rupture du supra-épineux ainsi que des bursites

40% des joueurs de tennis et baseball pro asymptomatiques présentent une lésion partielle ou full thickness de la coiffe côté dominant.

79% d'atteintes de la coiffe au niveau de l'épaule dominante et **86%** dans la non dominante ont été retrouvées chez des joueurs professionnels de baseball asymptomatiques.

Spécificité & sensibilité

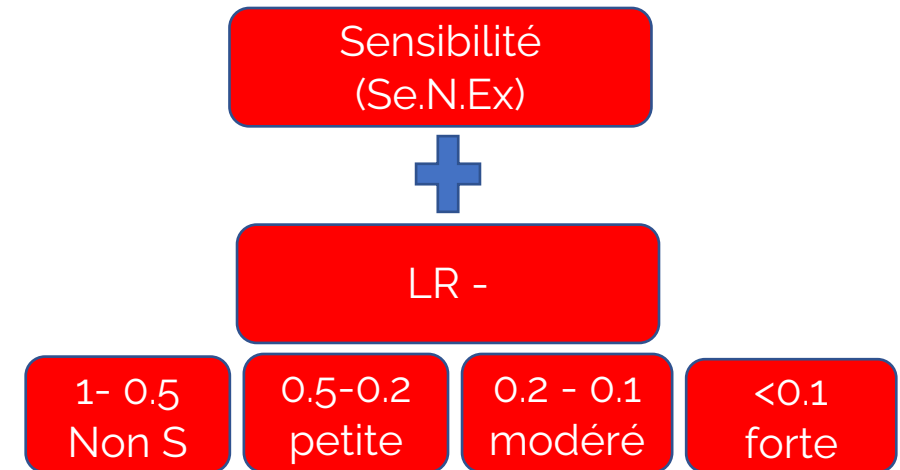
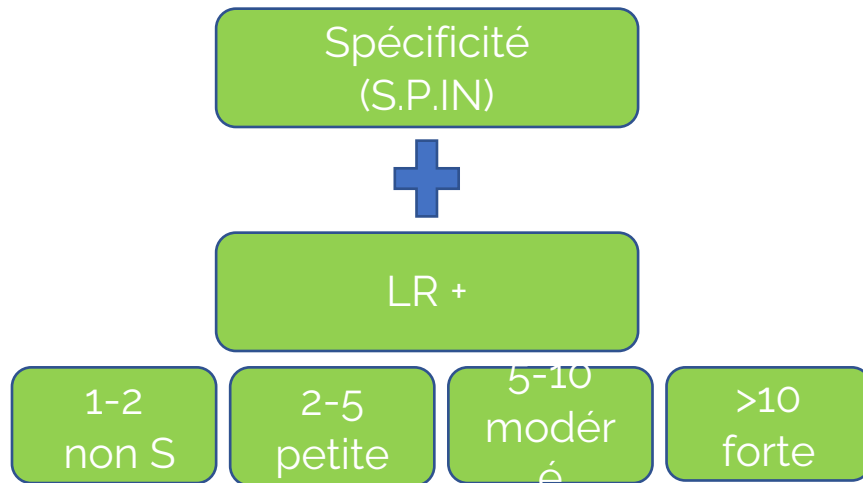
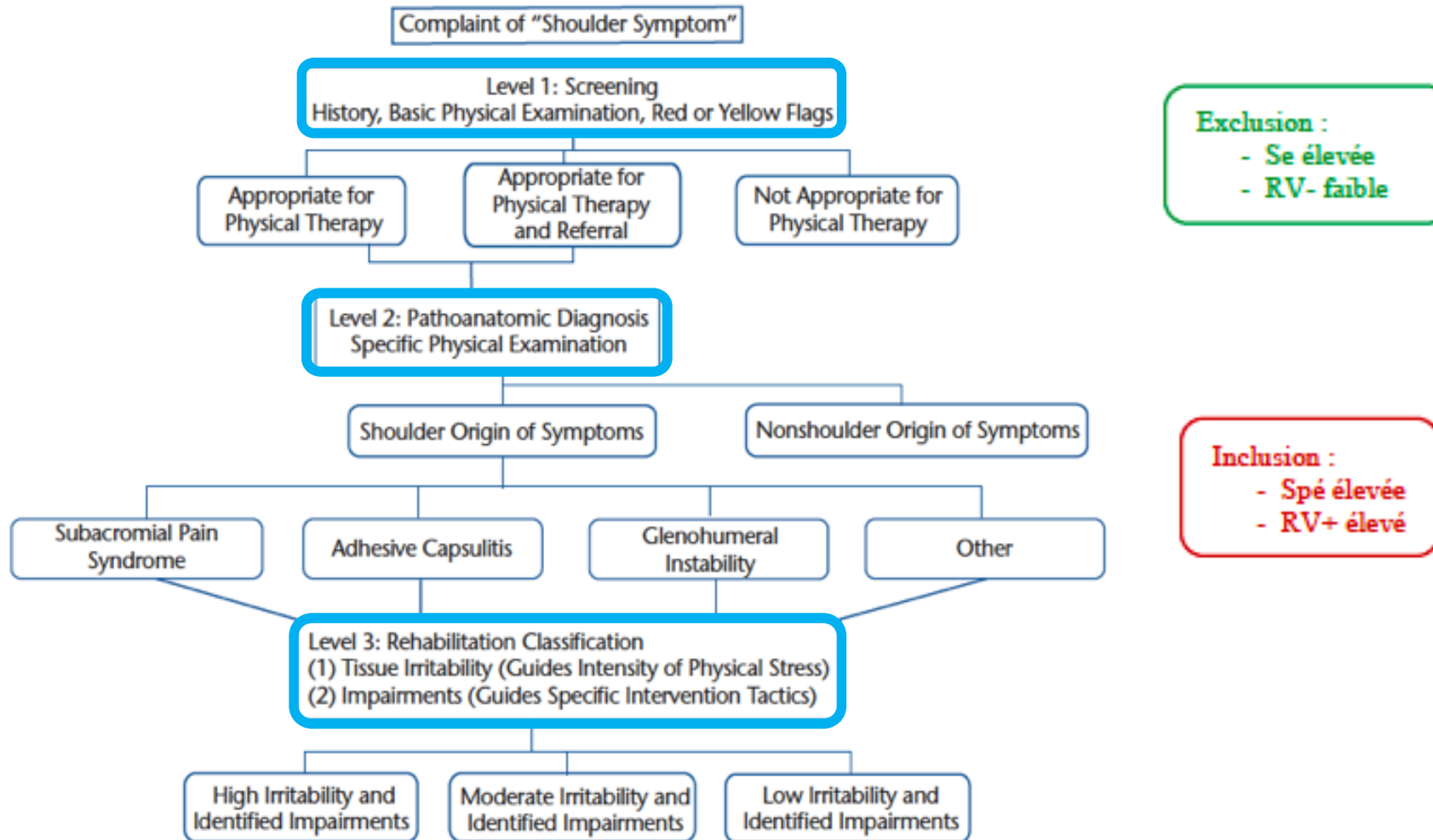


Table 4 Best* Test Combinations and Reported Value for Various Pathologies

Test Combination	Pathology	Lead Author	Sensitivity	Specificity	Positive LR	Negative LR
Passive Distraction and Active Compression	SLAP	Schlecter ⁴⁵	70	90	7.00	.11
Compression-rotation AND Apprehension AND Speed	Type II SLAP	Oh ⁵⁵	25	92	3.13	0.82
Anterior Slide AND Crank	Labral Tear	Walsworth ⁴⁴	34	91	3.75	0.73
Apprehension AND Relocation	Labral Tear	Guanche ⁶⁶	38	93	5.43	0.67
Age>39, Painful Arc, Self-report of Popping or Clicking	Supraspinatus Tendinopathy	Chew ³² ≥ 2 positive tests; 3 positive tests	75, 38	81, 99	3.82, 32.20	0.32, 0.63
Age≥65 AND Weakness in ER (Infraspinatus Test) AND Night Pain	RC Tear	Litaker ⁶⁷	49	95	9.84	0.54
Hawkins-Kennedy, Neer, Painful Arc, Empty Can, Resisted ER	Subacromial impingement	Michener ²⁴ ; ≥ 3 positive tests	75	74	2.93	0.34
Lift-off and/or Resisted IR	Subscapularis Tendinopathy; Subscapularis Tear	Naredo ⁵³ ; Naredo ⁵³	50, 50	84, 95	3.13, 10.0	0.60, 0.53
Apprehension AND Relocation	Anterior Instability	Farber ⁶⁸	81	98	39.68	0.19

*Best is defined as the highest sensitivity, specificity, or both from the studies with the least bias.

Staged Approach for Rehabilitation of Shoulder Disorders



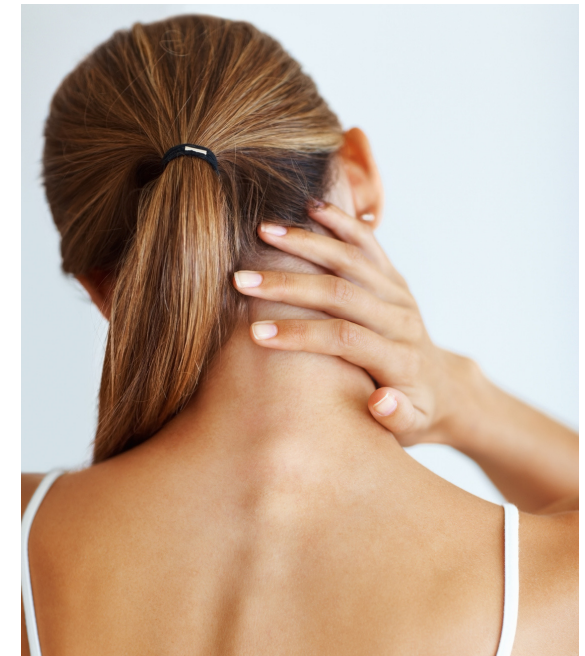
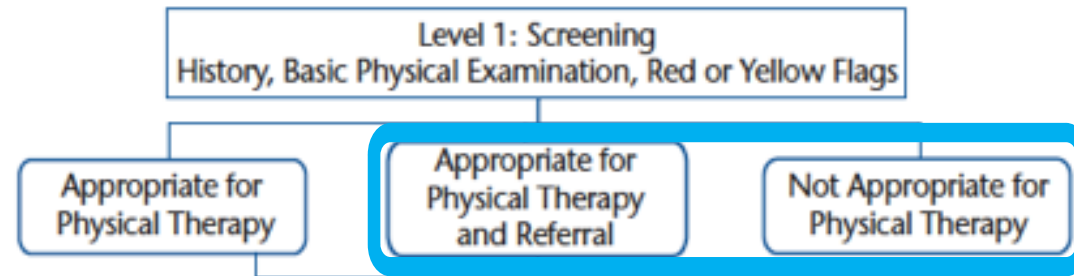




Table 1.

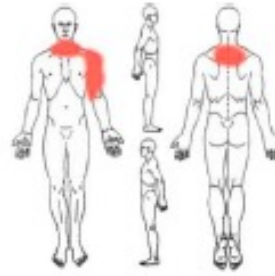
Potential Red Flag Conditions for the Shoulder (Modified From Mitchell et al²⁵)

Potential Condition	History and Examination Findings
Tumor	History of cancer Symptoms and signs of cancer, including unexplained weight loss, pain not correlated with mechanical stress, and unexplained fatigue Unexplained mass, swelling, or deformity
Infection	Red skin Fever Systemically unwell
Fracture or unreduced dislocation	Significant trauma Seizure Acute disabling pain Acute loss of motion Deformity or loss of normal contour
Neurologic lesion	Unexplained sensory or motor deficit
Visceral pathology	Pain not reproduced with shoulder mechanical stress Pain or symptoms with physical exertion or respiratory stress Pain associated with gastrointestinal symptoms Scapular pain associated with ingestion of fatty foods



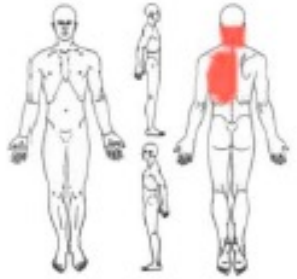
Le cœur

- ✓ Innervation : **T1-T5**
- ✓ Localisations :
 - rachis cervical antérieur
 - partie supérieure du MS gauche
 - rachis thoracique haut



Les poumons et bronches

- ✓ Innervation : **T5-T6**
- ✓ Localisations :
 - cervicales (si diaphragme)
 - rachis thoracique homolatéral



Trouble cardiaque?
 Douleur ou compression du thorax?
 Palpitation?
 Fumeur?
 Hypertension?
 Essoufflement même nocturne
 Œdème au niveau des extrémités
 Historique familiale de problème cardiaque
 hypercholestérolémie

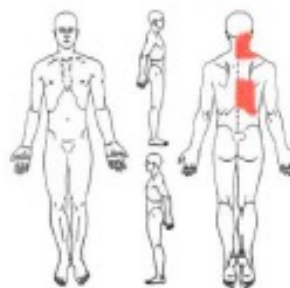
Fumeur?
 Toux prolongée?
 Essoufflement?
 Respiration sifflante?
 Expectoration?
 Historique d'asthme, emphysème,
 pneumonie, tuberculose?



Le foie



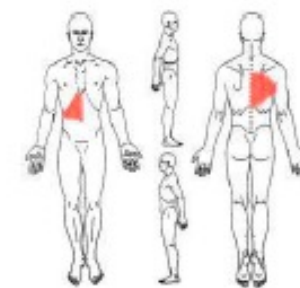
- ✓ Innervation : **T7-T9**
- ✓ Localisations :
 - rachis **cervical** à droite
 - rachis **thoracique moyen et bas** à droite



La vésicule biliaire



- ✓ Innervation : **T7-T9**
- ✓ Localisations :
 - **abdomen supérieur droit**
 - rachis **thoracique moyen et bas** à droite, avec partie **inférieure de la scapula**



Difficulté d'avaler/brûlure d'estomac

Nausée

Vomissement

Intolérance alimentaire spécifique

Constipation

Diarrhée

Changement de la couleur des selles

Saignement rectal

Historique de problème au niveau du foie ou de la vésicule biliaire

jaunisse



Wainner's Clinical Prediction Rule for Cervical Radiculopathy

The study includes four criteria: Cervical rotation less than 60 degrees, a positive Spurling's test, a positive distraction test, and a positive upper limb tension sign.

UTILITY SCORE **1**

Study	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0-14)
Wainner et al. ³³ (2 of 4 positive tests)	NT	39	56	0.88	1.08	10
Wainner et al. ³³ (3 of 4 positive tests)	NT	39	94	6.1	0.64	10
Wainner et al. ³³ (4 of 4 positive tests)	NT	24	99	30.3	0.76	10

Comments: A well done study that demonstrates a useful combination for diagnosis.

Upper Limb Tension Test (ULTT)



Cervical Distraction Test



Spurling's Compression Test



Spurling Test
Cervical Distraction Test
Upper Limb Tension Test (ULTT)
Rotation cervical inférieure à 60°

Evaluation du système neurologique

Radiculopathie cervicale est souvent associée avec des douleurs irradiantes dans le bras au delà du coude (Henderson et al.)

Testing manuel

Deltoïde (C5)
Biceps (C6)
Triceps (C7)
Court Abd du pouce (C8)
Interosseux (T1)

Sensibilité au toucher (dermatome)

Partie latérale de l'épaule C5
Pouce C6
Index C7
Auriculaire C8

Réflexes (bilatéralement)

Biceps (C5C6),
Brachioradiale (C5C6),
Triceps (C7)

Overlapping, Masquerading, and Causative Cervical Spine and Shoulder Pathology: A Systematic Review

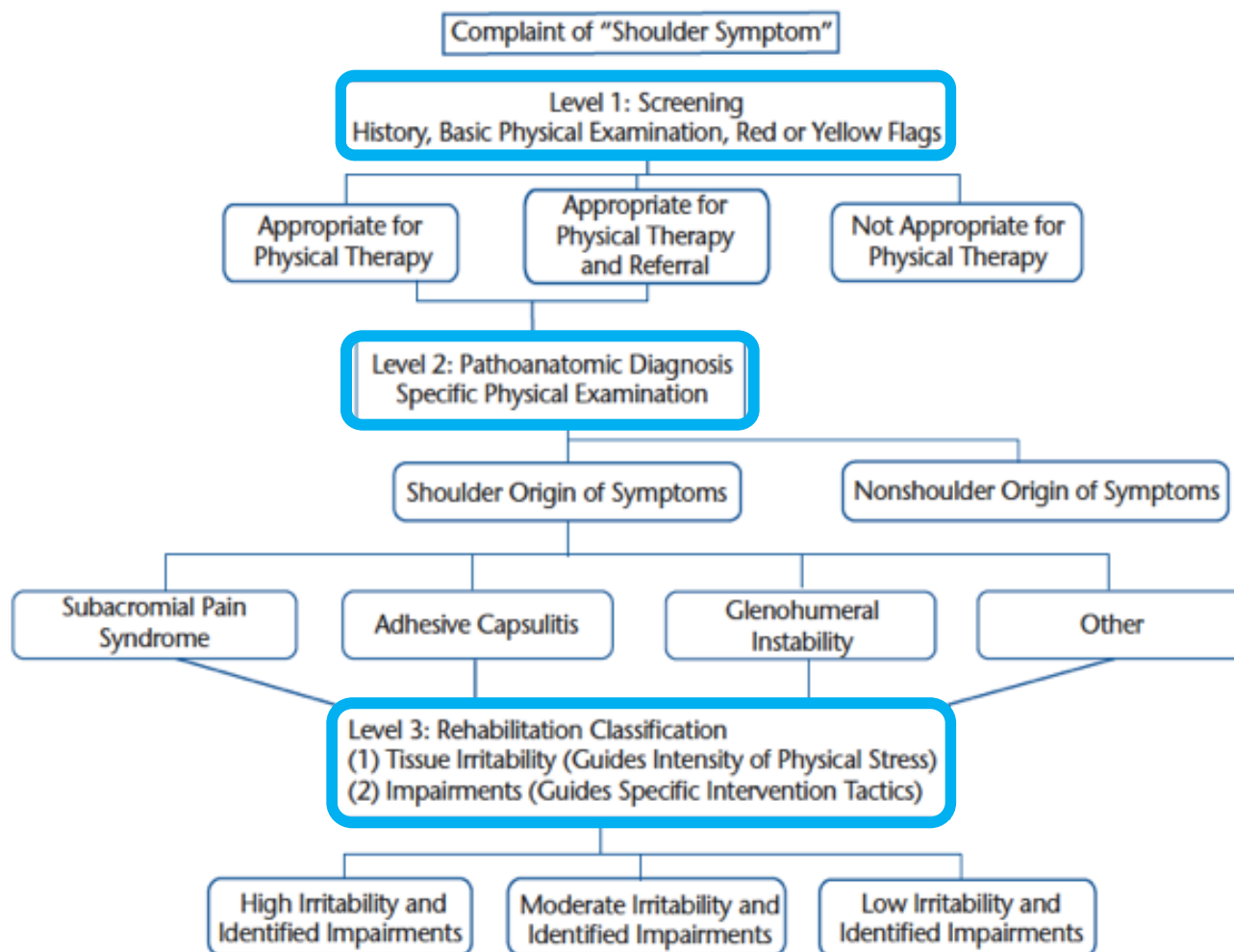
Yoshihiro Katsuura, MD^{1,2,3}, Jeremy Bruce, MD¹,
Samuel Taylor, MD^{2,3,4}, Lawrence Gullota, MD^{2,3,4},
and Han Jo Kim, MD^{2,3,4}



Staged Approach for Rehabilitation of Shoulder Disorders

Staged Approach for Rehabilitation Classification: Shoulder Disorders (STAR–Shoulder)

Philip W. McClure, Lori A. Michener

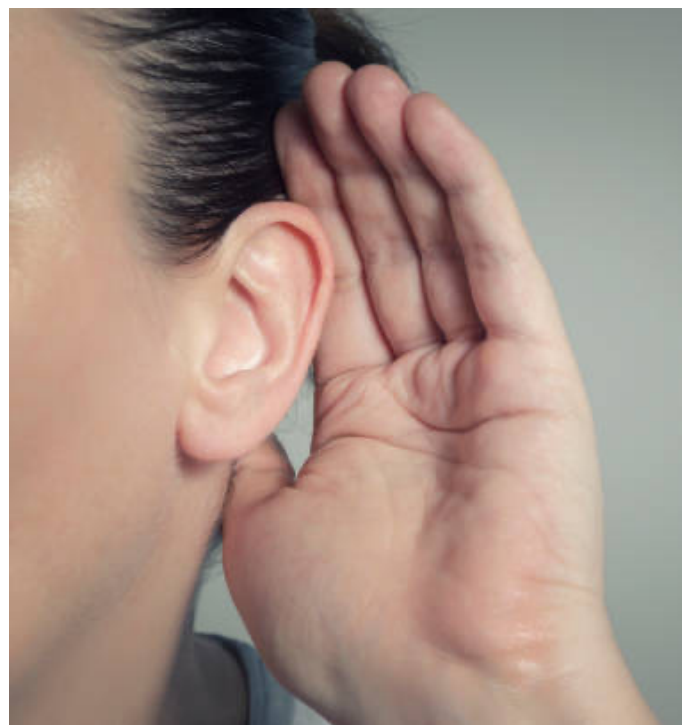
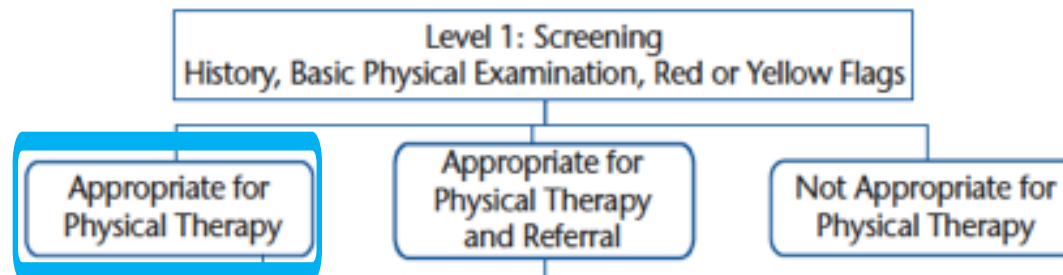


Exclusion :

- Se élevée
- RV- faible

Inclusion :

- Spé élevée
- RV+ élevé





	Traumatique	Surcharge Micro traumatique	Sans raison apparente
18-55 ans	Sub/luxation Fracture AC rupture coiffe Épaule gelée	Tendinopathie bursite	Épaule gelée calcification
55-65 ans	Sub/luxation Fracture AC rupture coiffe	Tendinopathie Rupture coiffe	Épaule gelée Rupture coiffe arthrose Calcification
> 65 ans	luxation Fracture rupture coiffe	Rupture coiffe tendinopathie	Rupture coiffe arthrose

Rupture coiffe des rotateurs (épaule faible)



- < 55 ans
- Bonne santé
- Mécanisme précis (chute importante)
- Douleur directement présente
- Perte de fonction

- > 55 ans
- PAS de mécanisme précis
- Douleur épisodique
- Augmentant avec le temps?

Parsonage Turner



- Douleur quadrant supérieur suivi d'un début de **faiblesse** (2j-1 semaine après)

Epaule gelée – Arthrose (Epaule raide)



Epaule gelée

Entre 40-60 ans,
Début **sans raison**,
facteurs de risques (diabète),
douleurs importantes
(repos, mouvements, nuit)

Arthrose

- > 65 ans présentant des douleurs diffuse dans l'épaule et présentant des **bruits articulaires**
Arthrose primaire ?
- > 65 ans présentant des douleurs d'épaule augmentant avec le temps ainsi qu'une perte de force. **Arthropathie en lien avec la coiffe?**
- > 65 ans antécédents de luxations ou de suture de coiffe? **Arthropathie en lien avec la coiffe ou arthrose secondaire?**



- **Trauma récent** avec apparition de la raideur directement ?
Luxation postérieure?
- Trauma récent/ dépendance à l'alcool/ utilisation prolongée de stéroïde? **Ostéonécrose aseptique de la tête humérale** (RX pour confirmer)

Epaule douloureuse



Tendinopathie Bursite

- Surcharge
- Arc douloureux

Tendinopathie calcifiante

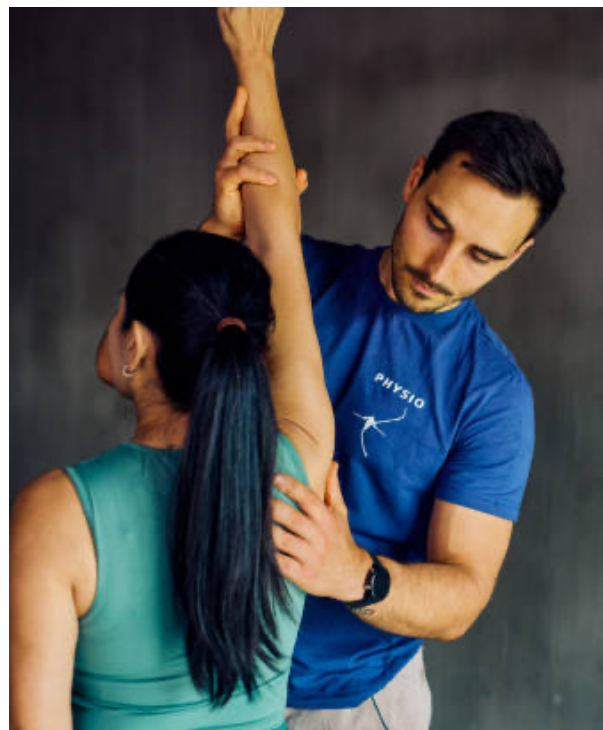
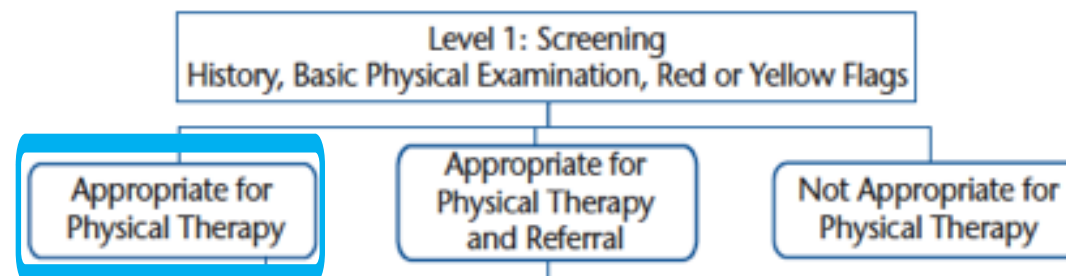
- Réveil avec des douleurs importantes (sensation de brûlure) au niveau épaule
- sans épisode de surcharge

Epaule gelée (phase douloureuse)

- Début sans cause apparente autour de 40-60 ans
- Facteurs de risques
- handicaps sévères et perturbation des nuits?

Parsonage Turner

- Douleur quadrant supérieur suivi d'un début de **faiblesse** (2j-1 semaine après)



Examen clinique de base



Evaluation de la mobilité passive, active et tests isométriques

Limitation passive



Limitation active

Limitation active
Arc douloureux/
tests isom

Épaule gelée?

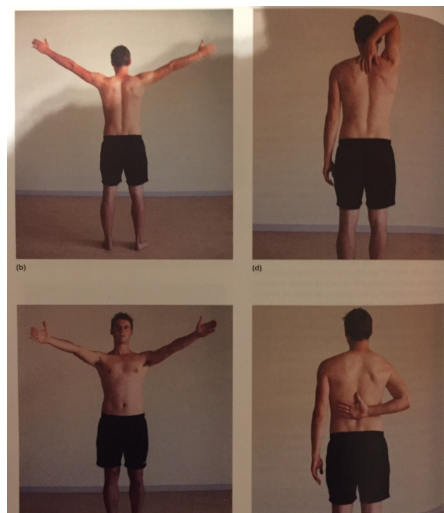
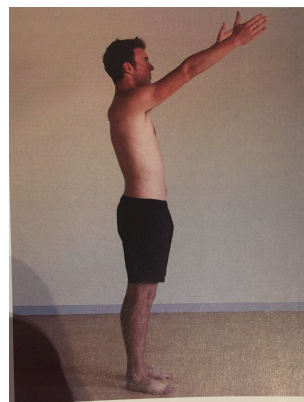
Arthrose?

Luxation post?

Tendinopathie?

Rupture coiffe?

Syndrome
douloureux
sous-acromial



AROM (actif)



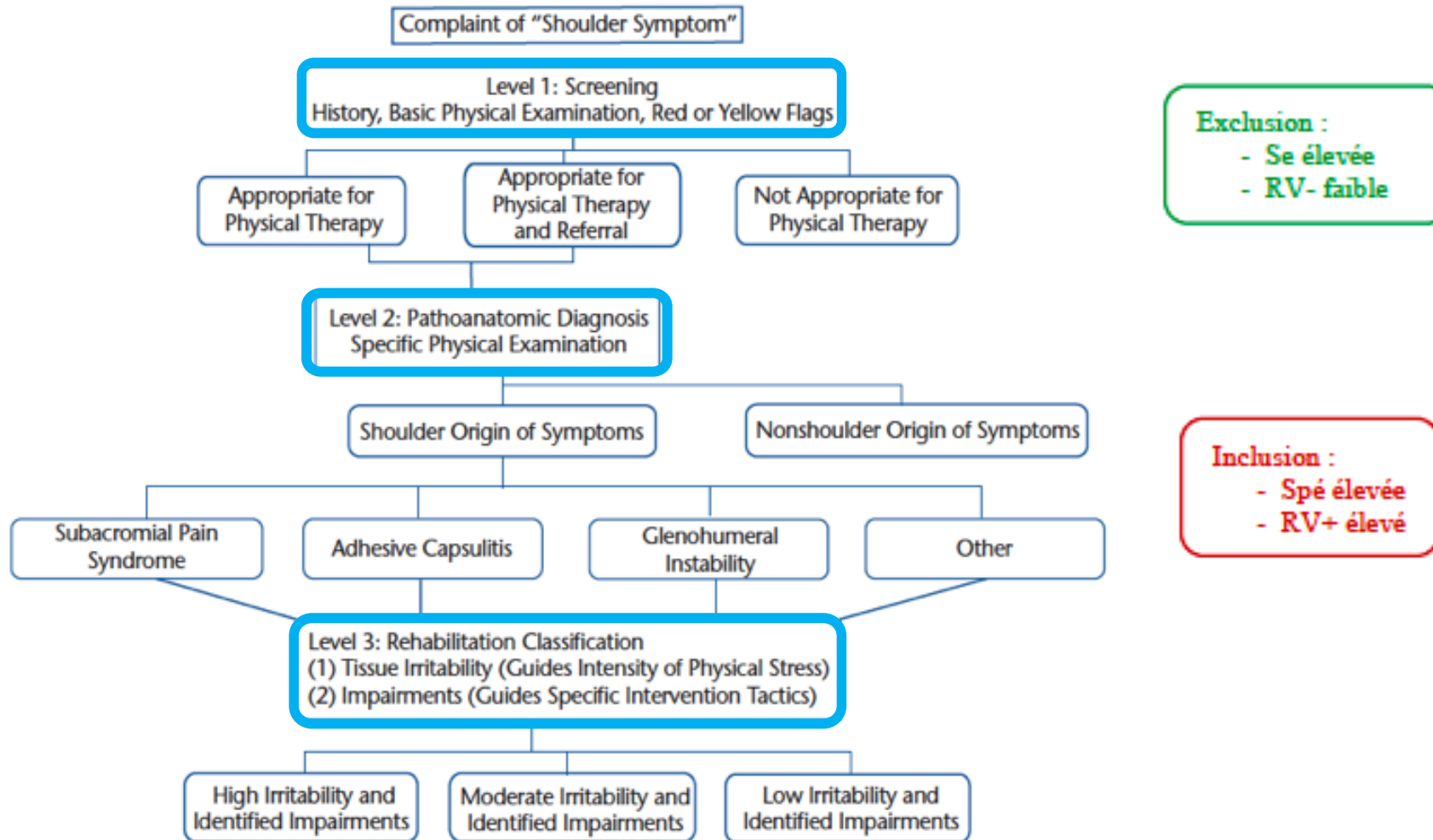
PROM (passif)

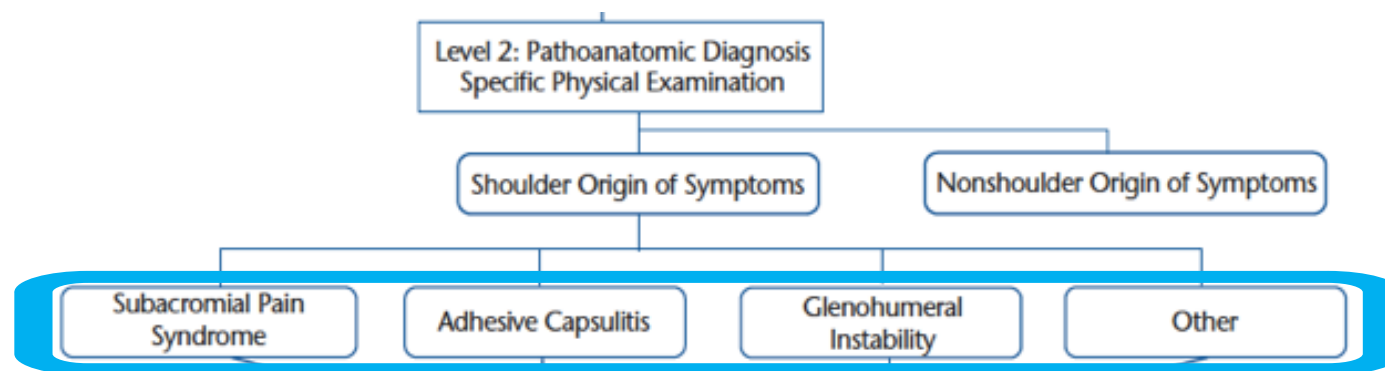


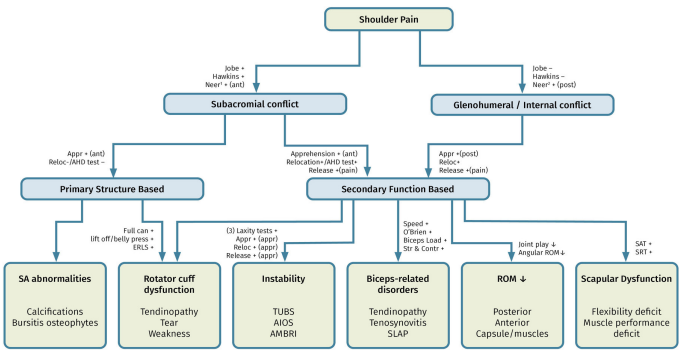
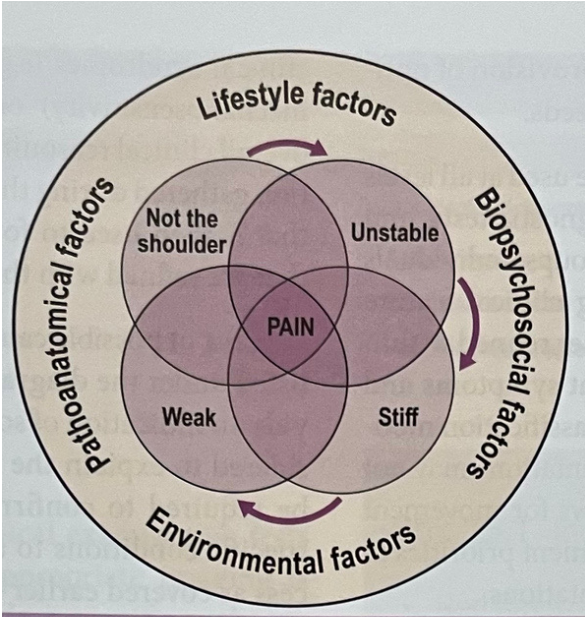
FORCE (ISOM)

	Luxation	Arthrose	tendinopathie	Tendinopathie calcifiante	Parsonnage Turner	Épaule gelée	Rupture coiffe
> 65 ans		> 65 ans					> 65 ans
55-65 ans							55-65 ans
18-55 ans	18-55 ans		18-55 ans	18-55 ans		35-65 ans	18-55 ans
Sans raison		Sans raison		Sans raison	Sans raison	Sans raison	Sans raison
Trauma	Trauma					Trauma	Trauma
Surcharge			Surcharge				Surcharge
Douleur soudaine	Douleur soudaine			Douleur soudaine	Douleur soudaine		
Douleur Progressive		Douleur Progressive	Douleur Progressive			Douleur Progressive	
Faiblesse					Faiblesse		Faiblesse
Limitation amplitude	Limitation amplitude	Limitation amplitude				Limitation amplitude	Limitation amplitude

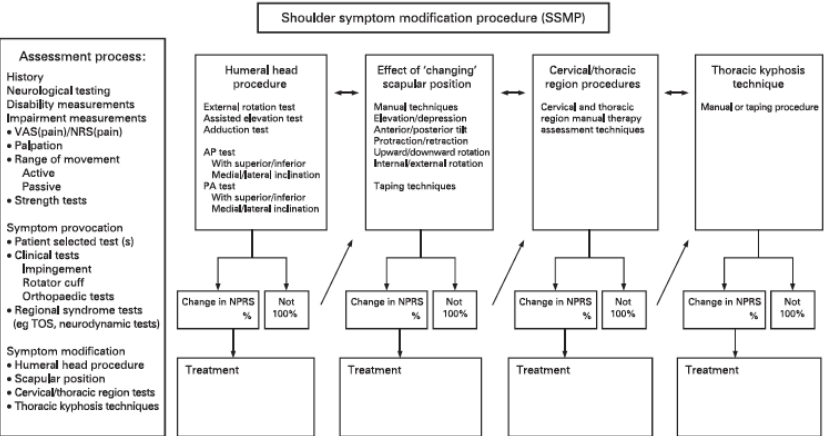
Staged Approach for Rehabilitation of Shoulder Disorders







Ann Coole 2021



Abbreviations: AP (anterior-posterior), PA (posterior-anterior), VAS (visual analogue scale), NPRS (numerical pain rating scale), TOS (thoracic outlet syndrome)



It Is Time to Put Special Tests for Rotator Cuff-Related Shoulder Pain out to Pasture

Review > [Orthop J Sports Med.](#) 2021 Sep 27;9(9):23259671211042011.
doi: 10.1177/23259671211042011. eCollection 2021 Sep.

Diagnostic Accuracy of Clinical Tests for Subscapularis Tears: A Systematic Review and Meta-analysis

Alexandre Lädermann^{1, 2, 3}, Philippe Collin⁴, Olivia Zbinden¹, Timon Meynard¹, Mo Saffarini⁵,
Joe Chih-Hao Chiu⁶

> [Sports Health.](#) 2021 Jan/Feb;13(1):78-84. doi: 10.1177/1941738120936232. Epub 2020 Aug 21.

Evidence-Based Physical Examination for the Diagnosis of Subscapularis Tears: A Systematic Review

Andrew Dakkak¹, Michael K Krill², Matthew L Krill³, Benedict Nwachukwu⁴,
Frank McCormick^{5, 6}

> [J Shoulder Elbow Surg.](#) 2007 Jul-Aug;16(4):403-7. doi: 10.1016/j.jse.2006.09.014.
Epub 2007 Mar 23.

Normalization of the subscapularis belly-press test

Brian Gilmer¹, Thomas Bradley Edwards, Gary Gartsman, Daniel P O'Connor, Hussein Elkousy

Affiliations + expand

PMID: 17363294 DOI: 10.1016/j.jse.2006.09.014

Comparative Study > [J Shoulder Elbow Surg.](#) 2003 Sep-Oct;12(5):427-30.
doi: 10.1016/s1058-2746(03)00047-8.

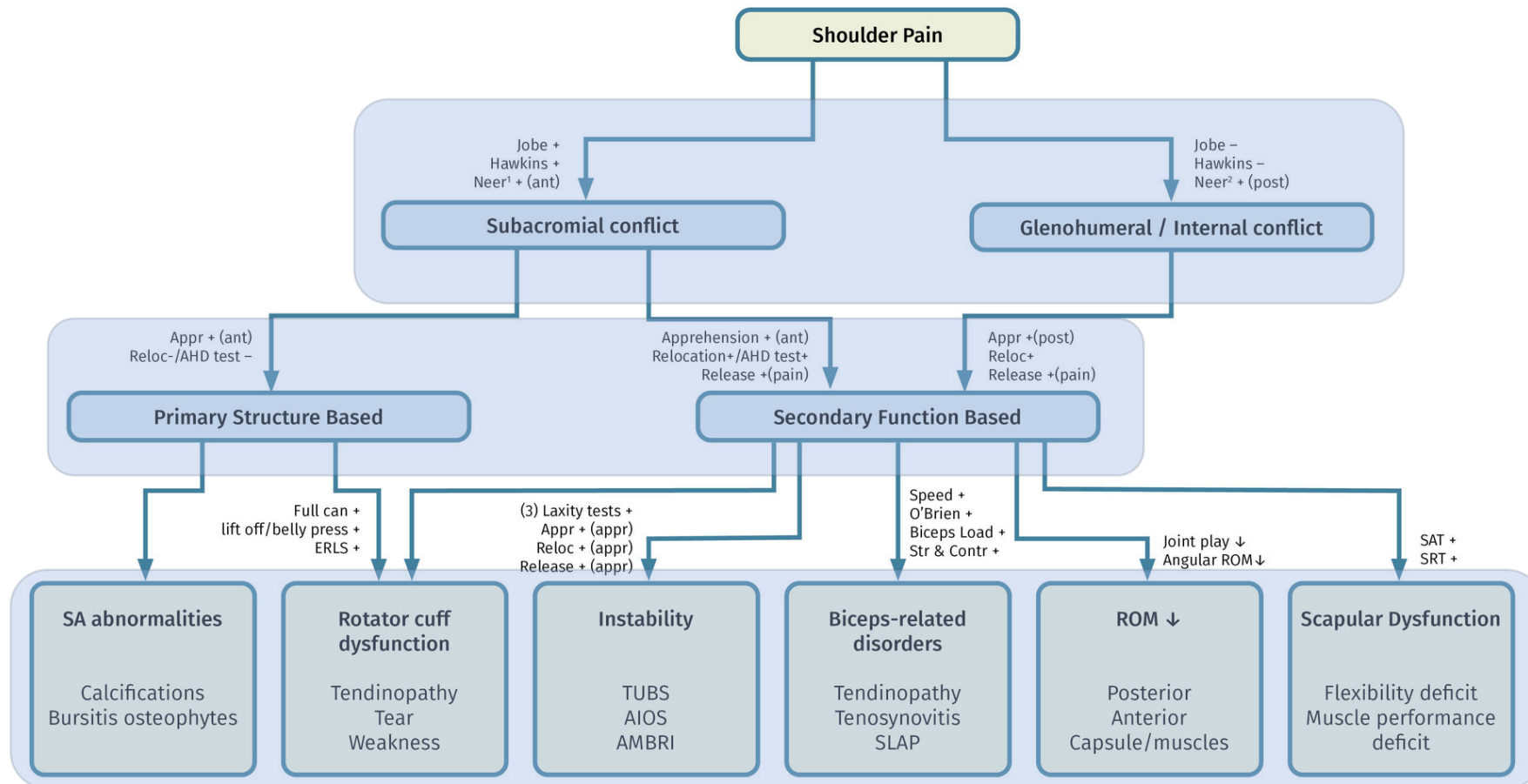
The belly-press test for the physical examination of the subscapularis muscle: electromyographic validation and comparison to the lift-off test

John M Tokish¹, Michael J Decker, Henry B Ellis, Michael R Torry, Richard J Hawkins

It Is Time to Put Special Tests for Rotator Cuff-Related Shoulder Pain out to Pasture

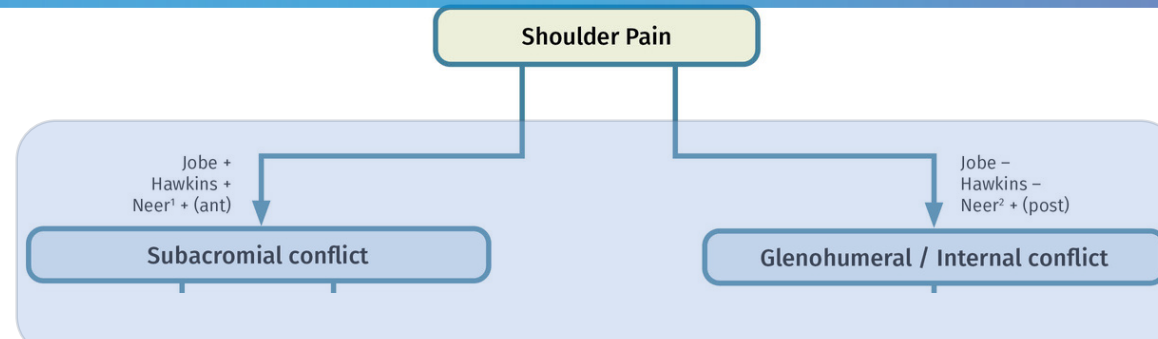
1. When using clinical tests for RCRSP, are clinicians capable of identifying the structure(s) causing the symptoms?
2. Do imaging findings—such as a thickened bursa, acromial spurs, rotator cuff tendon degeneration and tears, long head of biceps tendinosis, type II superior labrum anterior and posterior (SLAP) tears, and acromioclavicular joint degeneration—explain the cause of symptoms?
3. When surgeons perform acromioplasties, biceps tenodesis, type II SLAP repairs, or rotator cuff tendon surgery for nontraumatic tears, can they be certain they are operating on the tissues causing the symptoms?





Ann Cools 2021





Diagnostic Clusters—Impingement

UTILITY SCORE 2

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0–14)
Malhi & Khan ⁵⁵	Hawkins or Neer or Painful Arc or Subacromial Crepitus	NT	84	76	3.5	0.21	5
Callis et al. ⁸	At least 3 of 6: Hawkins, Neer, Horizontal Adduction, Speed, Yergason, Painful Arc, Drop Arm	NT	84	44	1.5	0.36	8
Park et al. ⁷²	Hawkins, Painful Arc, and Infraspinatus test	NT	NT	NT	10.56	0.17	10
Michener et al. ⁵⁹	3 or more positive of: Hawkins, Neer, Painful Arc, Empty Can, External Rotation Weakness	NT	75	74	2.93	0.34	11

Comments: Despite the strong numbers in the Park et al.¹⁶ study, the impingement tests themselves are not strong diagnostic tools and the diagnosis of impingement is not helpful in prognosis nor treatment.



Syndrôme de douleur sous-acromial



Arc douloureux



Jobe (empty can)



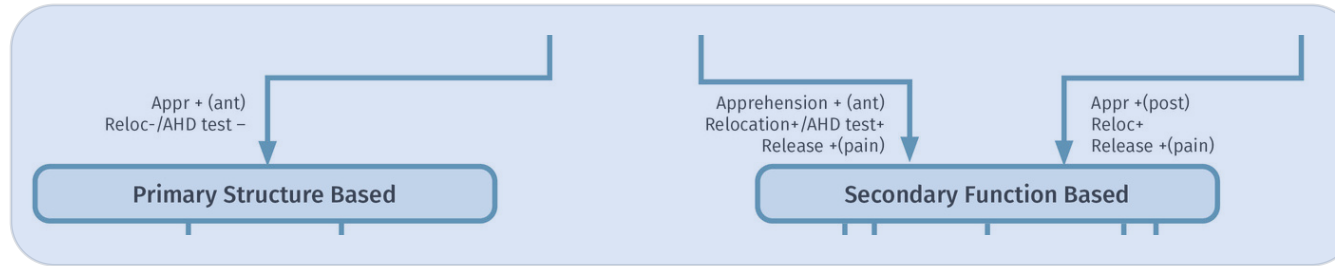
Hawkins

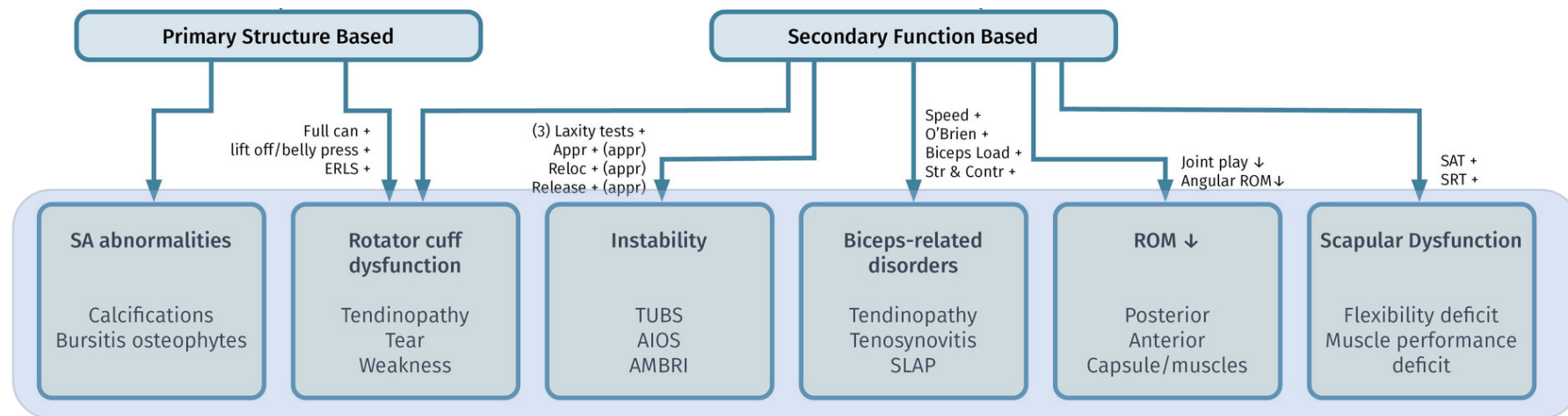


Neer



RE coude au corps





Tendinopathie de la coiffe de la coiffe

Narrative Review

Contractile dysfunction of the shoulder
(rotator cuff tendinopathy): an overview

Chris Littlewood

School of Health and Related Research, University of Sheffield, UK

1. exclude other sources of pain, e.g. the cervical spine, which would require intervention away from the shoulder;
2. minimal resting pain — pain at rest may be indicative of bursitis and/or other inflammatory conditions that might respond adversely to vigorous movement;¹⁵
3. largely preserved range of movement — to exclude presentations with movement restriction, e.g. frozen shoulder that might respond more favourably to stretching and/or mobilization;
4. pain exacerbated consistently through resisted testing which theoretically should, at least in part, implicate contractile tissue.



Rupture de la coiffe

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0-14)
Malhi & Khan ⁵⁵	Supraspinatus weakness or impairment of abduction	NT	100	99	NA	NA	5
Litaker et al. ⁴⁹	Age ≥ 65 and weakness in external rotation (Infraspinatus test) and night pain	NT	49	95	9.84	0.54	10
MacDonald et al. ⁵⁴ (Rotator Cuff Tendinopathy)	Hawkins or Neer Hawkins and Neer	NT	88 83	38 56	1.42 1.89	0.32 0.31	7
Ardic et al. ²	Hawkins or Neer	NT	78	50	1.56	0.44	12
Park et al. ⁷²	Painful Arc, Drop Arm, and Infraspinatus test	NT	NT	NT	15.57	0.16	10
Park et al. ⁷²	Age ≥ 60 , Painful Arc, Drop Arm, and Infraspinatus test	NT	NT	NT	28.00	0.09	10
Bak et al. ⁴ (Full Thickness, Supraspinatus Tear)	Active abduction < 90 degrees + Empty Can + ERLS test	NT	54	65	1.20	0.71	13
Bak et al. ⁴ (Full Thickness Supraspinatus Tear)	Active abduction < 90 degrees + Empty Can + Hawkins	NT	72	39	1.18	0.72	13
Murrell & Walton ⁶³	Empty Can and Infraspinatus Test and Hawkins or Neer	NT	NT	NT	48.0	0.76	4
Comments: Based on the higher quality studies, key ingredients to diagnostic clusters to detect a rotator cuff tear seem to be age and external rotation weakness plus either the Drop Arm or Empty Can. The Murrell & Walton⁶³ study scored poorly because it was published as a brief report without much detail. These authors reported that patients who present with shoulder pain, and who test positive for supraspinatus weakness, weakness in external rotation, and impingement, have a 98 percent chance of rotator cuff tear.							

Rupture de la coiffe



RE coude au corps



Drop arm

Instabilité de l'épaule

Diagnostic Clusters—Instability

UTILITY SCORE **1**

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0-14)
Malhi & Khan ⁵⁵	Apprehension or Relocation	NT	81	100	NA	19.0	5
Lo et al. ⁵²	Apprehension and Relocation and Surprise	NT	40	100	NA	NA	7
Farber et al. ¹⁵	Apprehension and Relocation	NT	81	98	36.98	0.19	11
Comments: Clearly the combination of Apprehension followed by Relocation is a winning combination but may not be as good as the Surprise test by itself, based on the statistics.							

Instabilité de l'épaule



Apprehension test



Relocation test

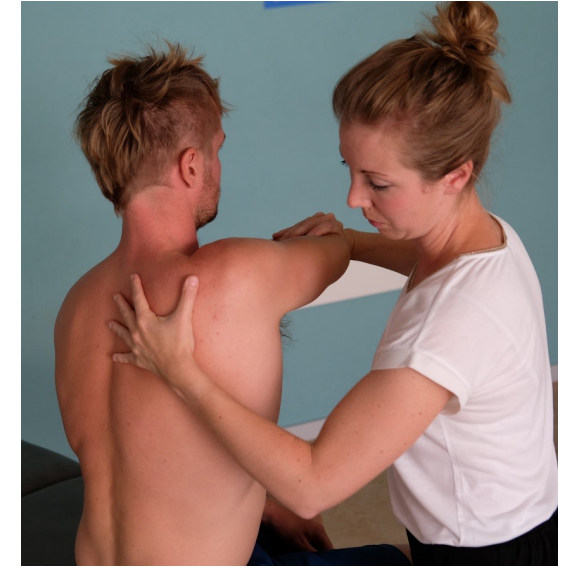
Laxité de l'épaule



Sulcus Sign



Load & shift test



Posterior laxity test

Lésions du labrum & biceps

Labrum

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0-14)
Malhi & Khan ⁵⁵	Apprehension or Relocation	NT	81	1.0	NA	19.0	5
Liu et al. ⁵⁰	Apprehension or Relocation or Clicking with Load and Shift or Sulcus	NT	90	85	6.00	0.12	9
Liu et al. ⁵⁰	Age < 35 and failed conservative care	NT	66	85	4.40	0.40	9
Guanche and Jones ²⁴	Relocation and Active Compression	NT	41	91	4.56	0.65	12
Guanche and Jones ²⁴	Relocation and Apprehension	NT	38	93	5.43	0.67	12
Guanche and Jones ²⁴	Relocation or Active Compression	NT	72	73	2.67	0.38	12
Guanche and Jones ²⁴	Relocation or Apprehension	NT	72	73	2.67	0.38	12
Oh et al. ⁶⁸	Compression Rotation and Active Compression and Biceps Load II	NT	22	95	4.40	0.82	11
Oh et al. ⁶⁸	Compression Rotation or Anterior Apprehension or Speed's	NT	80	28	1.11	0.71	11
Walsworth et al. ⁸³ (Any Labral Tear)	History of pop, click, or catch and Anterior Slide and Crank	NT	21	100	NA	0.91	11

Comments: A large majority (64%) of the patients in the Liu et al.⁵⁰ study were throwing athletes and all had failed conservative therapy. Active Compression, Relocation, and Apprehension seem to be the most popular tests as part of clusters but demographic data like age, onset, and overhead work or sport may be more important in diagnosing a SLAP lesion.

Biceps

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS Score (0-14)
Kibler et al. ⁴¹	Upper Cut and Speed's	NT	NT	NT	NT	NT	9
Gill et al. ²¹ (Biceps Tear)	Speed's and Biceps Palpation	NT	68	49	1.31	0.65	12

Comments: Kibler et al.⁴¹ performed a binary logistic regression to discover that the Upper Cut and Speed's explained 40% of the variance (R^2) in detecting biceps tendinopathy.

Lésions Labrum



Apprehension test



O'Brien test / Active compression Test



Relocation test



Biceps Load II Test

Tendinopathie du biceps



Upper cut test



Palpation biceps



Speed test

GIRD

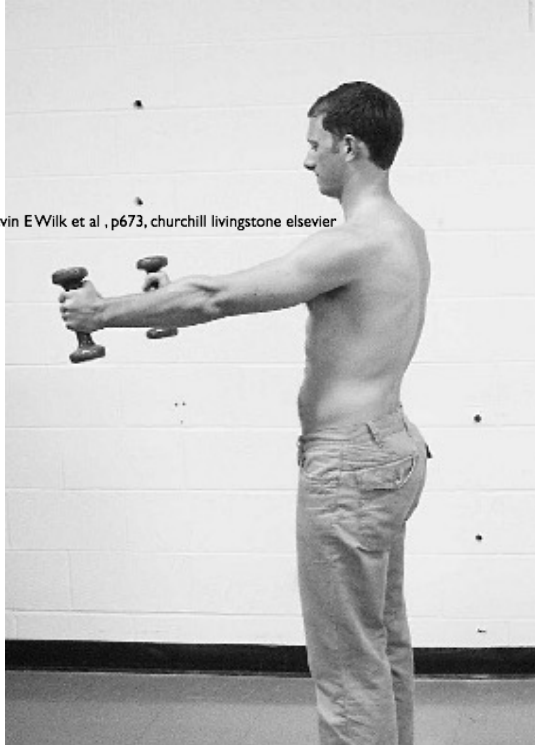


Diagnostic accuracy of scapular physical examination tests for shoulder disorders: a systematic review

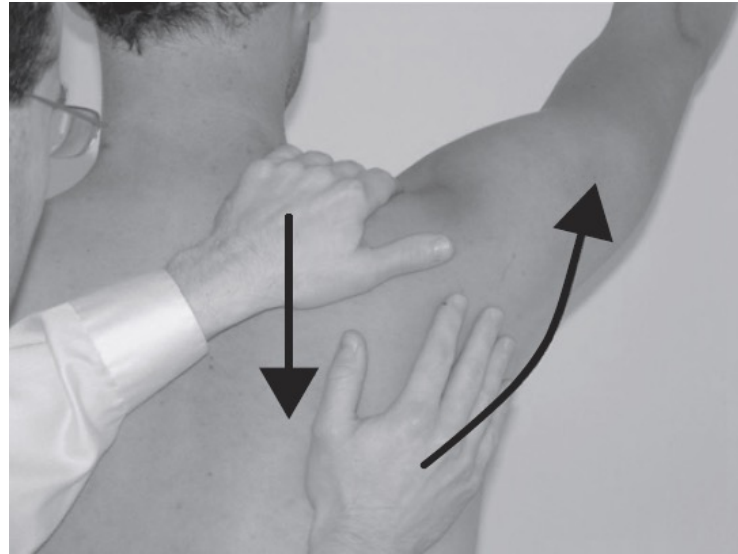
Alexis A Wright,¹ Craig A Wassinger,² Mason Frank,³ Lori A Michener,⁴
Eric J Hegedus¹

Conclusions Overall, no physical examination test of the scapula was found to be useful in differentially diagnosing pathologies of the shoulder.

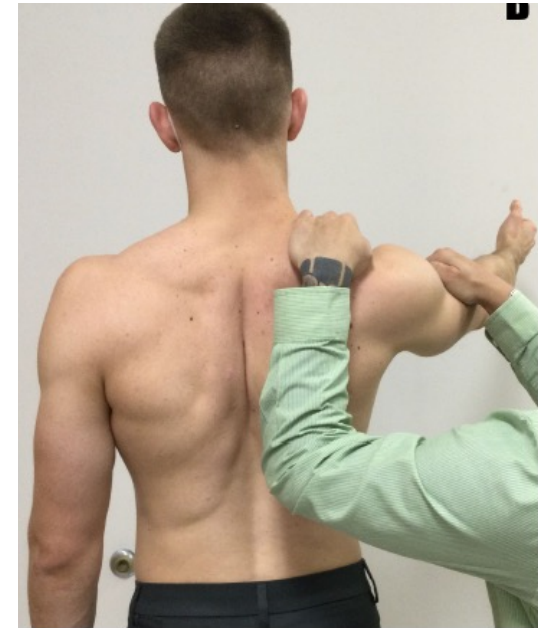
Dyskinésie scapulaire



Scapular dyskinesis test

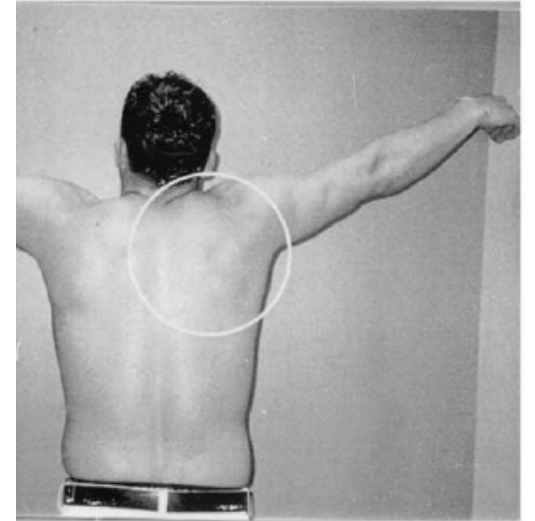
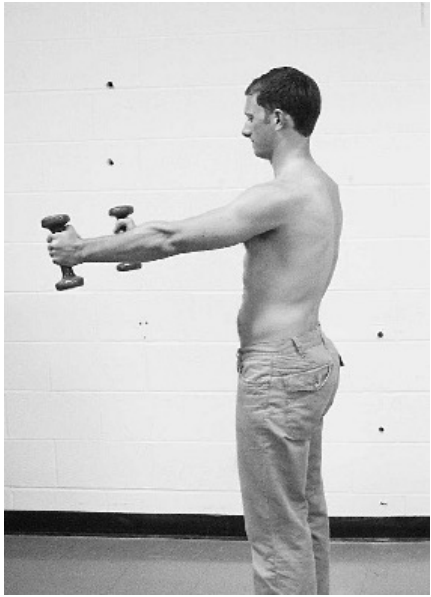


Scapular assistance test



Scapular retraction test

Dyskinésie scapulaire



Pathologie acromio-claviculaire

Study	Cluster	Reliability	Sensitivity	Specificity	LR+	LR-	QUADAS
Chronopoulos et al. ¹¹	2 or more of: Cross-body Adduction, AC Resisted Extension, and Active Compression	NT	81	89	7.36	0.21	10
Comments: There is only a small improvement in diagnostic ability of a cluster of AC joint tests when compared to the AC Resisted Extension test alone							

Pathologie acromio-claviculaire



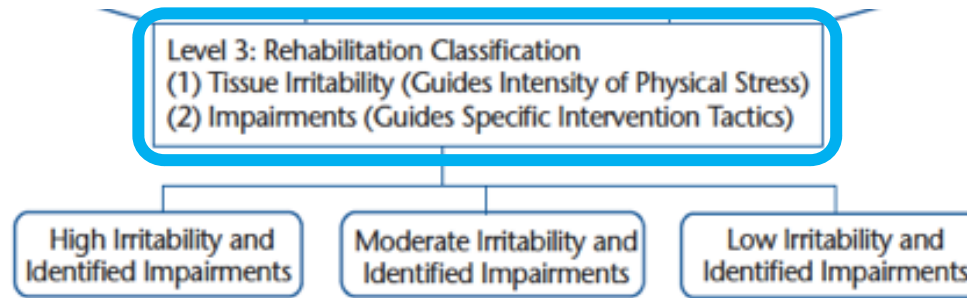
Cross body adduction test



AC resisted extension test



O'Brien test / Active compression Test



- Douleur >7/10
- Douleur la nuit/en dormant
- Douleur constante au repos
- Douleur avant la fin d'amplitude (examen clinique)
- Douleur irradiant jusqu'au coude
- Handicap élevé



- Douleur modérée 4-6 /10
- Douleur variable la nuit
- Pas de douleur au repos
- Douleur en fin d'amplitude (examen clinique)
- Douleur dans le bras
- Handicap modérée



- Douleur < 3/10
- Pas de douleur la nuit
- Pas de douleur au repos
- Douleur minimale lors de la surpression (examen clinique)
- Douleur région épaule
- Handicap faible



Take home message



A photograph of three surgeons in an operating room, wearing blue scrubs, masks, and hairnets, focused on a surgical procedure. The scene is dimly lit with a strong blue tint, and the surgeons are positioned around a patient who is not fully visible.

La rééducation des pathologies de la coiffe des rotateurs

Philippe Declève PT, PhD



Les tendinopathies de la coiffe des rotateurs

Rupture de la coiffe des rotateurs non-opérée et opérée

Tendinopathie de la coiffe des rotateurs



Rupture de la coiffe des rotateurs



Les tendinopathies de la coiffe des rotateurs

Mécanisme

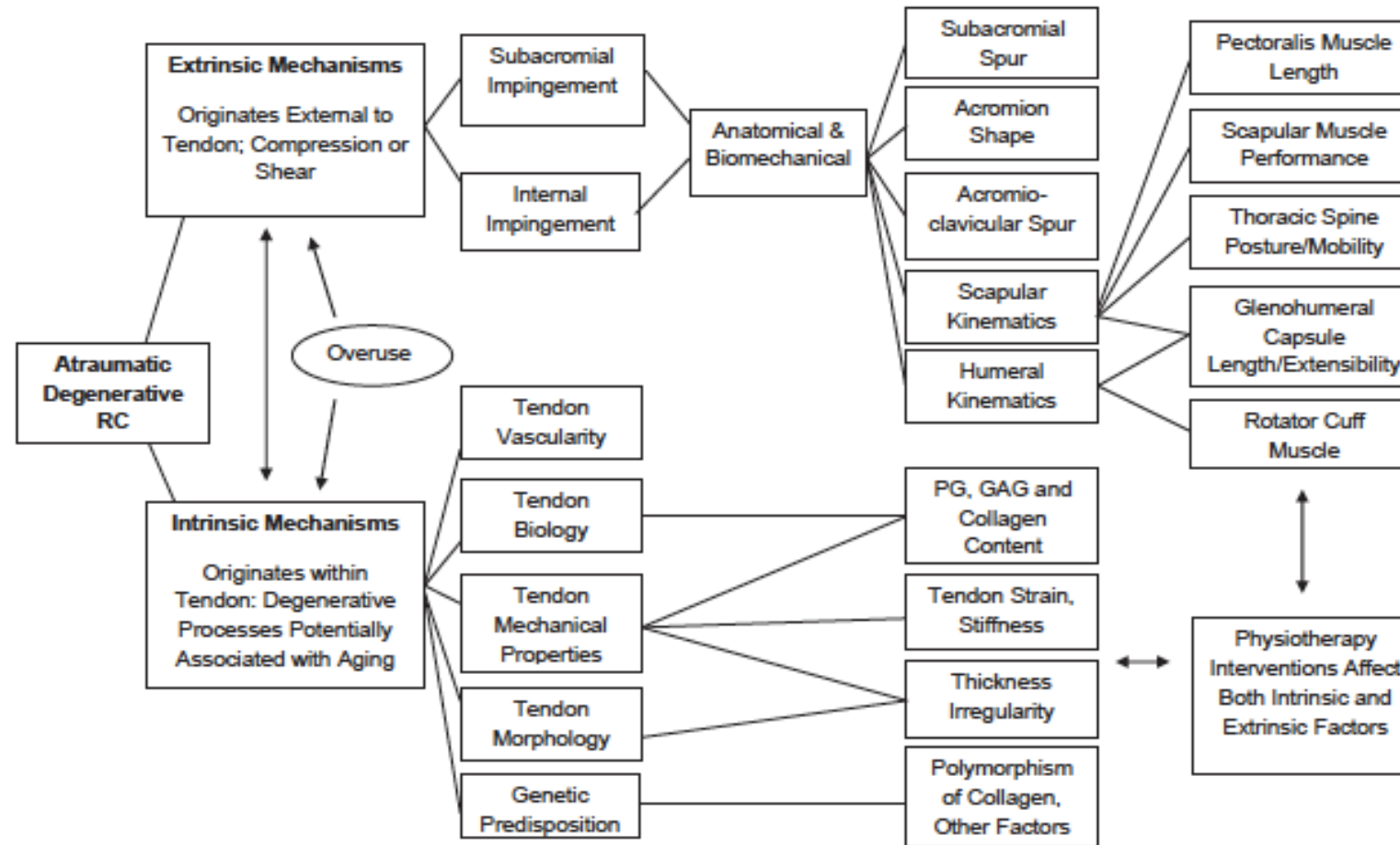


Fig. 2. Intrinsic and extrinsic factors in atraumatic degenerative RC. GAG = glycosaminoglycans; PGs = proteoglycans; RC = rotator cuff. Adapted with permission from Seitz et al²⁵

Mécanisme

Rotator cuff tendinopathy: a model for the continuum of pathology and related management

Jeremy S Lewis

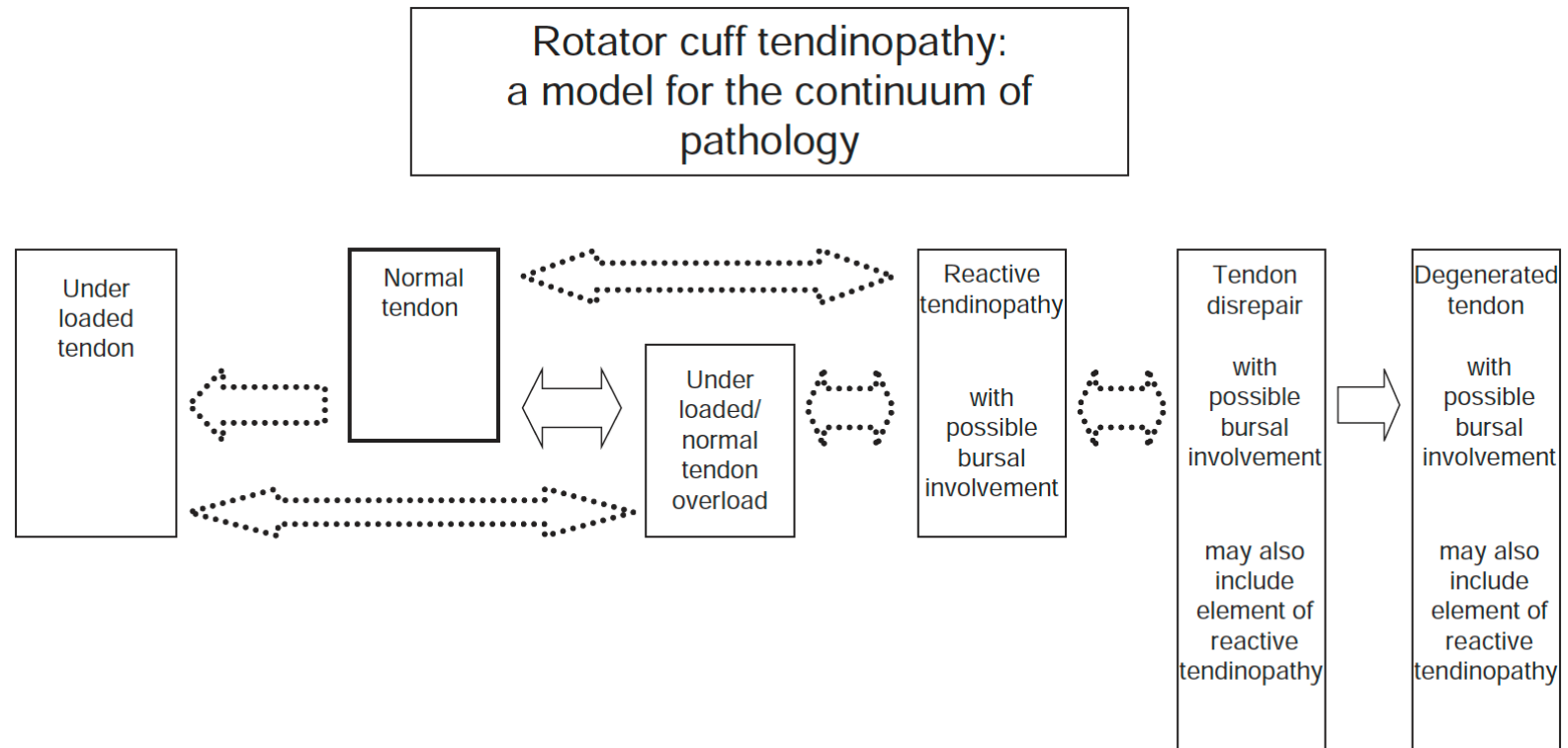
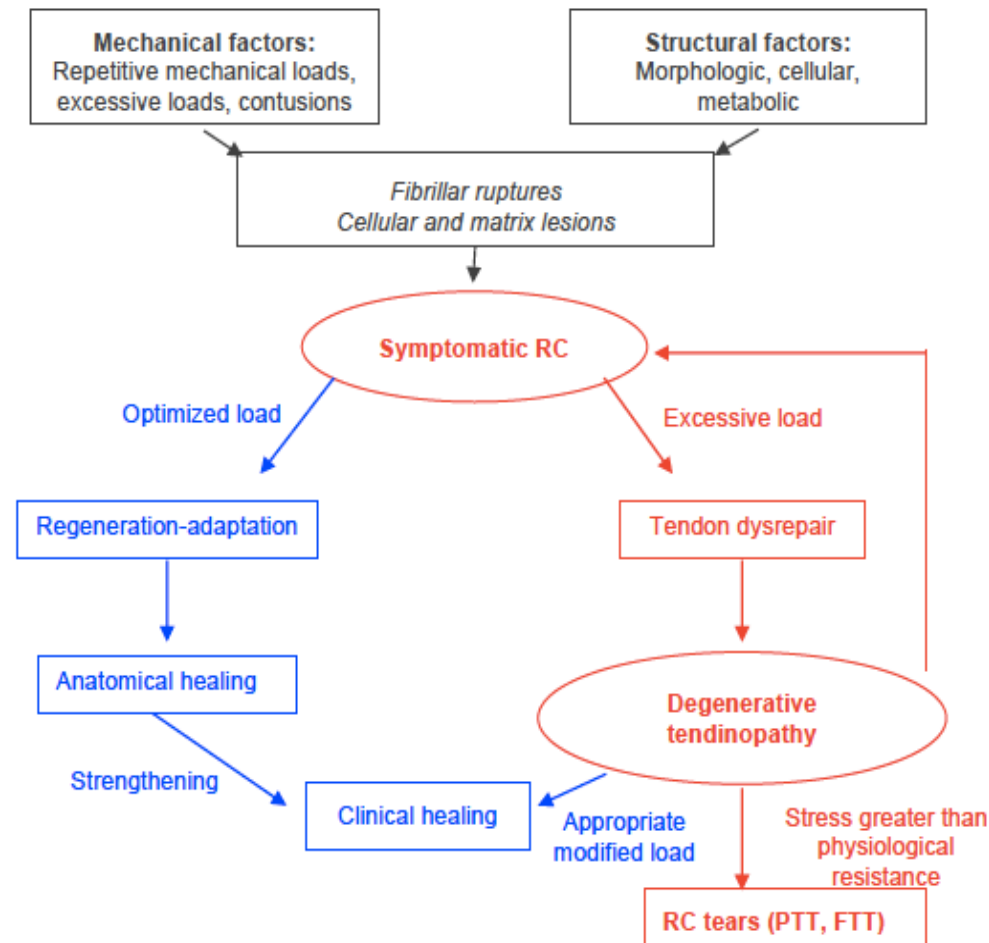


Figure 1 Rotator cuff tendinopathy: a model for the continuum of pathology. Dotted arrows, potentially reversible; solid two-directional arrows, reversible; solid single-directional arrows, irreversible; dotted single-directional arrows, irreversible without going through an intermediate step.

Mécanisme



; and tendinopathy continuum. FTT = full thickness tear; PTT = partial thickness tear; RC = rotator cuff. Adapted with permis



Contents lists available at ScienceDirect

Journal of Hand Therapy

journal homepage: www.jhandtherapy.org



JHT READ FOR CREDIT ARTICLE #485.

Scientific/Clinical Article

Rehabilitation of symptomatic atraumatic degenerative rotator cuff tears: A clinical commentary on assessment and management



Sarah Bleichert PT, MCISC^a, Genevieve Renaud PT, MCISC^a, Joy MacDermid PT, PhD^a, Lyn Watson PT^b, Ken Faber MD, MHPE, FRCSC^a, Ross Lenssen PT^b, Marie Saulnier PT, MCISC^a, Paul Phillips PT, MCISC^a, Tyler Evans PT, MCISC^a, Jackie Sadi PT, MSc^{a,*}

^aSchool of Physiotherapy, Faculty of Health Sciences, Western University, London, Ontario, Canada

^bLifeCare Prospan Sports Medicine Centre and Melbourne Orthopaedic Group, Melbourne, Australia



Mécanisme

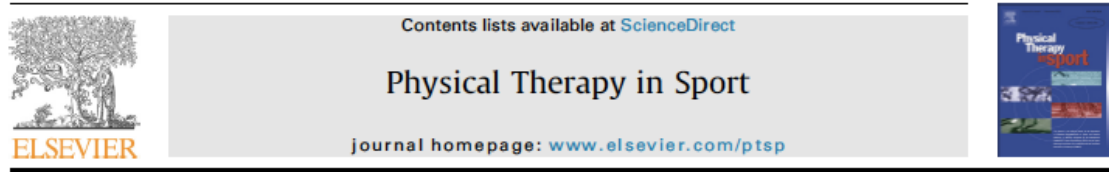
- Personal factors
 - Advanced age
- Clinical factors
 - Prolonged duration of symptoms
 - Previous history of shoulder injury
 - Delayed care after the initial injury
 - High shoulder pain intensity
- Psychosocial factors
 - Psychological distress
 - Anxiety
 - Catastrophizing
 - Kinesiophobia
 - Poor social support
- Work-related factors
 - Delayed workers compensation claims in relation to the date of the injury
 - Loss of employment ties
 - A history of absenteeism at work
 - Work-related feelings of injustice
 - For workers, having one or more dependent(s) at home
 - Worker's perception of work-related high demands and litigation with their employer or insurer
 - Work physical requirements including more frequent or higher arm elevation, shoulder loads, hand-arm force exertion, hand-arm vibration, repetitive movements, or awkward postures.

Rotator Cuff Tendinopathy Diagnosis, Non-surgical Medical Care and Rehabilitation: A Clinical Practice Guideline

Article in *Journal of Orthopaedic and Sports Physical Therapy* · January 2025
DOI: 10.2519/jospt.2025.13182



Quelles prises en charge?



Literature review

The efficacy of therapeutic ultrasound for rotator cuff tendinopathy:
A systematic review and meta-analysis



François Desmeules^{a, b, *}, Jennifer Boudreault^a, Jean-Sébastien Roy^{c, d},
Clermont Dionne^{c, e}, Pierre Frémont^{c, f}, Joy C. MacDermid^g



Physiotherapy 102 (2016) 41–49

Physiotherapy

Systematic review

Efficacy of transcutaneous electrical nerve stimulation for
rotator cuff tendinopathy: a systematic review



F. Desmeules^{a, b, *}, J. Boudreault^a, J.-S. Roy^{c, d}, C.E. Dionne^{c, e}, P. Frémont^{c, f},
J.C. MacDermid^g

4. Conclusion

Based on low level evidence, US therapy is not superior to a placebo and is of no added benefit when used in conjunction with exercise, in terms of pain reduction and self-reported function. Laser therapy may provide greater benefit compared to US in terms of pain reduction. Clinicians should not use US therapy until more high quality evidence demonstrate the efficacy of therapeutic US in adults suffering from RC tendinopathy.

Conclusion

Due to the limited number of studies and the overall high risk of bias of the included studies, no conclusions can be drawn on the efficacy of TENS for the treatment of rotator cuff tendinopathy. Until more methodologically sound studies provide evidence on the efficacy of TENS to reduce pain, clinicians should prefer other evidence-based rehabilitation interventions to treat patients with rotator cuff tendinopathy.



Quelles prises en charge?

One year results of a randomized controlled trial on radial Extracorporeal Shock Wave Treatment, with predictors of pain, disability and return to work in patients with subacromial pain syndrome

Elisabeth KVALVAAG^{1,2 *}, Cecilie ROE¹, Kaia B. ENGBRETSSEN¹, Helene L. SOBERG¹, Niels G. JUEL¹, Erik BAUTZ-HOLTER¹, Leiv SANDVIK³, Jens I. BROX¹

Cite this article as: BMJ, doi:10.1136/bmj.38961.584653.AE (published 29 September 2006)

Research

BMJ

Mobilisation with movement and exercise, corticosteroid injection, or wait and see for tennis elbow: randomised trial

Leanne Bisset, Elaine Beller, Gwendolen Jull, Peter Brooks, Ross Darnell, Bill Vicenzino

Conclusions

Radial ESWT was not superior to sham rESWT in addition to supervised exercises in the long term for patients with subacromial shoulder pain with or without calcification in the rotator cuff. Negative outcome expectations, frequent use of pain medication, not working at baseline, marital status (single), low self-reported general health status and attending few supervised exercise sessions in our department predicted a poor result on SPADI after one year. Most factors could be addressed by the clinician to improve the effectiveness of supervised exercises (Table VI).

Conclusions

The high recurrence rates, general delay in recovery, and poor overall performance with corticosteroid injections should be taken under consideration by both patients and their doctors in the management of tennis elbow. An approach combining elbow manipulation and exercise has a superior benefit to wait and see in the first six weeks and to steroid injections in the long term and may be recommended over corticosteroid injections. However, patients with tennis elbow can be reassured that most cases will improve in the long term when given information and ergonomic advice about their condition.



Blood Flow Restriction Resistance Training in Tendon Rehabilitation: A Scoping Review on Intervention Parameters, Physiological Effects, and Outcomes

Ian Burton^{1*} and Aisling McCormack²

Principe

Entraînement en résistance qui utilise des « cuffs » pneumatiques autour du membre pour réduire partiellement le flux artériel tout en créant l'occlusion du retour veineux. Permet l'utilisation d'une intensité/charge plus faible à 20-40% de la 1RM au lieu de 70% (traditionnellement)

Effets du BFR

- Augmentation de la force
- Augmentation de l'hypertrophie
- Effets physiologiques bénéfiques au niveau des systèmes cardiovasculaire, endocrinien et musculo-squelettique
- Effet hypoalgésique par l'exercice
- ...



Blood Flow Restriction Training in Patients With Rotator Cuff Tendinopathy: A Randomized, Assessor-Blinded, Controlled Trial

Dilara Kara, PT, MSc,* Levent Ozcakar, MD, PhD,† Serdar Demirci, PT, PhD,‡ Gazi Huri, MD, PhD,§ and Irem Duzgun, PT, PhD*

Très peu d'études concernant le membre supérieur.
Réalisées principalement sur des sujets sains

2 groupes (contrôle et BFR)
8 semaines d'exercices
2 rdv par semaine (16 sessions)
Les exercices devaient être réalisés 3x/jours
entre les sessions.

CONCLUSION

In patients with RC tendinopathy, low-load BFR training provided a greater increase in biceps brachii muscle hypertrophy and shoulder IR strength at slow angular velocity—when compared with the non-BFR group at the same load. This study partially affirms the effects of BFR training on muscle strength/hypertrophy in proximal and distal sites of the occlusion in patients with shoulder pain. However, there is no superiority of either exercise training as regards reducing pain and improving shoulder function in RC tendinopathy.



Quelles prises en charge?

Rotator Cuff Tendinopathy Diagnosis, Non-surgical Medical Care and Rehabilitation: A Clinical Practice Guideline

Article in Journal of Orthopaedic and Sports Physical Therapy - January 2025
DOI: 10.2519/jospt.2025.13182

EVIDENCE SYNTHESIS AND RATIONALE

Therapeutic ultrasound and extracorporeal shockwave therapy are not useful to reduce pain and/or disability in adults with RC non-calcific tendinopathy. Acupuncture and laser may be useful to reduce pain and/or disability in adults with RC tendinopathy. Therapeutic ultrasound and extracorporeal shockwave therapy, especially high energy extracorporeal shockwave therapy, may be useful to reduce pain and/or disability in adults with RC calcific tendinopathy.

EVIDENCE SYNTHESIS AND RATIONALE

There is a lack of high-level quality evidence to conclude on the efficacy of taping. There is uncertain evidence regarding the effect of taping alone or in combination to reduce pain and disability in adults with RC tendinopathy when compared to a sham or other conservative interventions.



Quelles prises en charge?

[RESEARCH REPORT]

ARIEL DESJARDINS-CHARBONNEAU, PT, MSc¹ • JEAN-SÉBASTIEN ROY, PT, PhD^{2,3} • CLERMONT E. DIONNE, OT, PhD^{2,4}
PIERRE FRÉMONT, MD, PhD^{2,5} • JOY C. MACDERMID, PT, PhD⁶ • FRANÇOIS DESMEULES, PT, PhD^{1,7}

The Efficacy of Manual Therapy for Rotator Cuff Tendinopathy: A Systematic Review and Meta-analysis

FRANÇOIS DESMEULES

Thérapie manuelle seule

Thérapie
manuelle et
autres
interventions

Thérapie
manuelle et
exercices

Pas clair
pour la
fonction

Diminue la
douleur

Quelles prises en charge?

Rotator Cuff Tendinopathy Diagnosis, Non-surgical Medical Care and Rehabilitation: A Clinical Practice Guideline

Article *in* Journal of Orthopaedic and Sports Physical Therapy - January 2025
DOI: 10.2519/jospt.2025.13182

EVIDENCE SYNTHESIS AND RATIONALE

Spinal and upper limb manual therapy, manipulation, mobilization, mobilization with movement, and massage can be used as an addition to exercise for the treatment of RC tendinopathy. Alone or combined with other modalities, manual therapy can provide mostly short-term pain and disability reductions in adults with RC tendinopathy.







SYSTEMATIC REVIEW

Shoulder Rotator Cuff Disorders: A Systematic Review of Clinical Practice Guidelines and Semantic Analyses of Recommendations



Patrick Doiron-Cadrin, PT, MSc,^a Simon Lafrance, PT, MSc,^a Marie Saulnier, PT, MSc,^a Émie Cournoyer, BSc,^a Jean-Sébastien Roy, PT, PhD,^{b,c} Joseph-Omer Dyer, PT, PhD,^d Pierre Frémont, MD, PhD,^b Clermont Dionne, OT, PhD,^{b,e} Joy C. MacDermid, PT, PhD,^f Michel Tousignant, PT, PhD,^g Annie Rochette, OT, PhD,^{d,h} Véronique Lowry, PT, MSc,^a Nathalie J. Bureau, MD, MSc,^{i,j} Martin Lamontagne, MD,^k Marie-France Coutu, Psy, PhD,^l Patrick Lavigne, MD,^{a,m} François Desmeules, PT, PhD^{a,d}

examination was not precisely defined. Prescribing exercise for the treatment of RC tendinopathy and RC full-thickness tears was universally recommended among the guidelines covering this subject. Manual therapy was either considered “recommended” or “may be recommended”; these recommendations are in line with the results of a systematic review published by Desjardins-Charbonneau et al³⁸ which concluded that manual therapy may decrease pain in adults with RC tendinopathy. In

SIMON LAFRANCE, PT, MSc¹² • MAXIME CHARRON, PT, MSc² • JEAN-SÉBASTIEN ROY, PT, PhD¹⁴ • JOSEPH-OMER DYER, PT, PhD¹⁵
PIERRE FRÉMONT, MD, PhD¹ • CLERMONT E. DIONNE, OT, PhD¹⁷ • JOY C. MACDERMID, PT, PhD⁹ • MICHEL TOUSIGNANT, PT, PhD¹⁰
ANNIE ROCHETTE, OT, PhD¹¹ • PATRICK DOIRON-CADRIN, PT, MSc² • VÉRONIQUE LOWRY, PT, MSc¹² • NATHALIE BUREAU, MD, MSc^{12,13}
MARTIN LAMONTAGNE, MD, MSc^{13,14} • EMILIE SANDMAN, MD, MSc^{15,16} • MARIE-FRANCE COUTU, Psy, PhD¹⁷
PATRICK LAVIGNE, MD, PhD^{2,15} • FRANÇOIS DESMEULES, PT, PhD¹²

Diagnosing, Managing, and Supporting Return to Work of Adults With Rotator Cuff Disorders: A Clinical Practice Guideline

active exercises rather than passive modalities to reduce pain and disability (R26-28). For workers, these can be designed to be performed in the workplace (R29).^{106,123,150} A large body of evidence supports the prescription of exercises to reduce pain and disability among adults with a rotator cuff tendinopathy.^{38,39,61,88,103,111,117,124,128}

The most effective exercise approach remains uncertain. It is unclear if there are significant and clinically important differences between different exercises types or regimens such as concentric or eccentric exercises,^{39,82,117} exercise prescription below or above the pain threshold,³⁹ different dosages,⁹⁴ or supervised compared to unsupervised home exercises.^{39,58} Motor control exercises lead

to a significantly greater reduction in pain and disability when compared to strengthening exercises among adults with a shoulder disorders (rotator cuff tendinopathy or shoulder instability).⁸⁰ However, it is unclear if scapular-focused exercises are superior to nonscapular-focused ones¹³³ or if specific shoulder exercises are superior to general shoulder exercises in adults with a rotator cuff tendinopathy.^{141,146}

Clinicians may consider adding manual therapy to an exercise program to decrease pain and disability (R30). Manual therapy may significantly reduce pain and disability among adults with a rotator cuff tendinopathy, but only in the short term.^{31,38,61,99,124,146}



Quelles prises en charge?

Rotator Cuff Tendinopathy Diagnosis, Non-surgical Medical Care and Rehabilitation: A Clinical Practice Guideline

Article in *Journal of Orthopaedic and Sports Physical Therapy* - January 2025
DOI: 10.2519/jospt.2025.13182

EVIDENCE SYNTHESIS AND RATIONALE

Evidence generally shows that using an exercise program is more effective to reduce pain and disability in adults with rotator-cuff tendinopathies than no treatment or other intervention. Current evidence seems to indicate that supervised exercise programs are not superior to home-based unsupervised exercise programs for pain and disability reductions. Motor control exercise programs could be better than standard exercise programs for pain and disability reductions. It remains unclear if specific exercise programs are more effective than general exercise programs and if higher load exercise programs show better efficacy than lower load exercise programs.

EVIDENCE SYNTHESIS AND RATIONALE

The inclusion of education is recommended in the management of RC tendinopathy. It should include advice pertaining to exercise supervision, goal setting, activity modification and information about the condition and pain management options. The information provided should be patient-centered, individualized, and consider the individual's level of health literacy, goals, concerns, beliefs and social support .



Quels sont les effets des exercices?

Do structural changes (eg, collagen/matrix) explain the response to therapeutic exercises in tendinopathy: a systematic review

Benjamin T Drew,¹ Toby O Smith,² Chris Littlewood,³ Ben Sturrock⁴

Overall, there is conflicting evidence relating to the association between pain and structural change following therapeutic exercise.

Overall, there is conflicting evidence relating to the association between function and structural change following therapeutic exercise.

Overall, there is conflicting evidence to support the association between treatment satisfaction and structural change following therapeutic exercise.



“You have (rotator cuff related) shoulder pain, and to treat it, I recommend exercise.” A scoping review of the possible mechanisms underpinning exercise therapy

Jared K. Powell^{a,*}, Ben Schram^a, Jeremy Lewis^{b,c}, Wayne Hing^a

Table 4
Summary of mechanisms and themes suggested in included studies.

<i>Theme (number of times suggested) and %</i>	Neuromuscular (n = 156) 77%	Tissue factors (n = 23) 11%	Neuro – endocrine – immune (n = 14) 7%	Psychological (n = 10) 5%
<i>Mechanism (number of times suggested)</i>	Motor control (n = 47) Muscle strength (n = 43) Mobility/range of motion (n = 20) Acromiohumeral distance (n = 19) Soft tissue length/tension (n = 15) Proprioception (n = 4) Neuromuscular activity (n = 3) Posture (n = 3) Muscle endurance (n = 2)	Muscle and tendon properties (n = 6) Tendon remodelling (n = 6) Blood flow (n = 3) Oxygen availability (n = 3) Angiogenesis (n = 2) Tendon homeostasis (n = 1) Collagen synthesis (n = 1) Muscle and tendon architecture (n = 1)	Inflammation (n = 5) PNS/CNS sensitivity (n = 3) Exercise-induced hypoalgesia (n = 2) Gate control (n = 1) Hormonal (n = 1) Endogenous neuropeptides (n = 1) Biochemical (n = 1)	Self-efficacy (n = 2) Coping with pain (n = 2) Reassurance (n = 1) Fear avoidance (n = 1) Pain catastrophising (n = 1) Perceived disability (n = 1) Graded exposure (n = 1) Motivation (n = 1)

Les exercices semblent fonctionner mais...

Dosage?

Un ou plusieurs exercices?

Chaîne ouverte ou fermée? Analytique ou chaîne cinétique?

Léger ou lourd? Isométrique? Excentrique?

Fréquence?

A domicile ou supervisée?

Douleur ou non-douloureux?

Léger ou lourd? Isométrique? Excentrique?

Three Months of Progressive High-Load Versus Traditional Low-Load Strength Training Among Patients With Rotator Cuff Tendinopathy

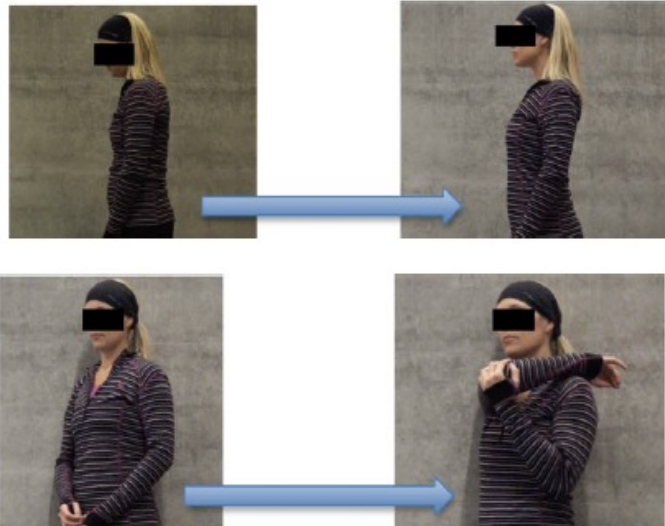
Primary Results From the Double-Blind Randomized Controlled RoCTEx Trial

Kim Gordon Ingwersen,^{1,2} PT, PhD, Steen Lund Jensen,³ MD, PhD, Lilli Sørensen,¹ MD, Hans Ri Jørgensen,⁴ MD, PhD, Robin Christensen,⁵ Prof., Karen Søgaard,⁶ Prof., and Birgit Juul-Kristensen,^{1,2,3} Assoc. Prof.
Investigation performed at Hospital Lillebaelt, Vejle Hospital, Vejle, Denmark, and University of Southern Denmark, Odense M, Denmark

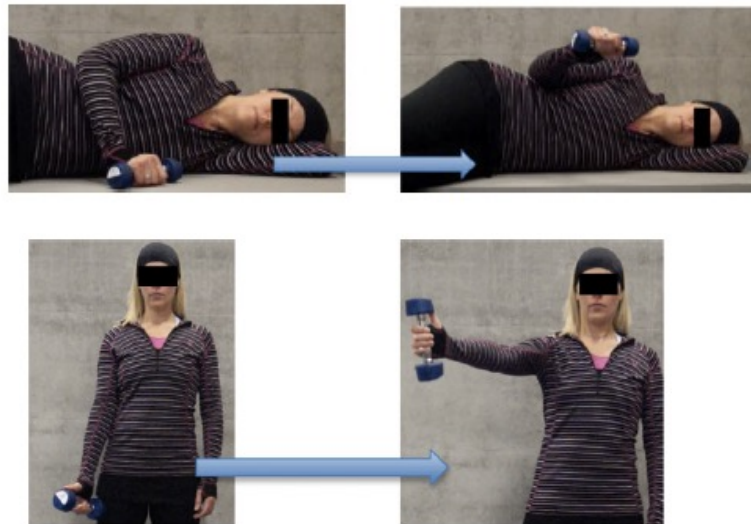
18-65 ans

Symptômes depuis 3 mois

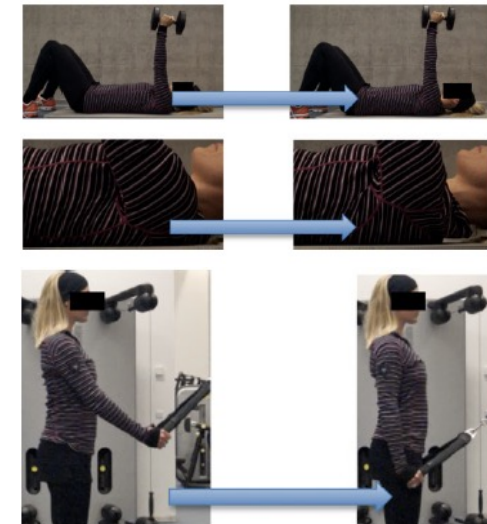
exercices de mobilité



exercices coiffe



exercices scapula



Groupe contrôle

20-25 répétitions

Groupe expérimental

15 repetitions in week 1
12 repetitions in weeks 2 + 3
10 repetitions in weeks 4 + 5
8 repetitions in weeks 6 + 7 + 8
6 repetitions in weeks 9 + 10 + 11 + 12

The exercise is carried out for 4 sets. Sp

Léger ou lourd? Isométrique? Excentrique?

CONCLUSION

Our results showed there was no superior benefit of PHLE over traditional LLE in patients with rotator cuff tendinopathy. Further investigation of the possible interaction between exercise type and corticosteroid injection is needed to establish optimal and potentially synergistic combinations of these 2 factors. This finding suggests that shared decision making between patients and therapists, based on individual preferences, can safely be performed to secure optimal compliance.

Léger ou lourd? Isométrique? Excentrique?

Knee Surg Sports Traumatol Arthrosc (2017) 25:2051–2059
DOI 10.1007/s00167-016-4223-x



SHOULDER

Eccentric versus conventional exercise therapy in patients with rotator cuff tendinopathy: a randomized, single blinded, clinical trial

Beate Dejaco¹ · Bas Habets¹ · Corné van Loon³ · Susan van Grinsven³ · Robert van Cingel^{1,2}

exercices
excentriques
2X/J

Empty can
prone 90° ER
Pect minor stretching
cross add stretch

3 séries de 8 répétitions
12 semaines

groupe contrôle
8 exercices 1x/j

Full can
ER and IR 0°
Prone horizontal abduction
Shoulder shrug
knee push-up plus
Stretching pect minor
Cross adduction stretch

Léger ou lourd? Isométrique? Excentrique?

Knee Surg Sports Traumatol Arthrosc (2017) 25:2051–2059
DOI 10.1007/s00167-016-4223-x



SHOULDER

Eccentric versus conventional exercise therapy in patients with rotator cuff tendinopathy: a randomized, single blinded, clinical trial

Beate Dejaco¹ · Bas Habets¹ · Corné van Loon³ · Susan van Grinsven³ · Robert van Cingel^{1,2}

Conclusion

This study shows that a 12-week-isolated eccentric training programme of the RC is beneficial for shoulder function and pain after 26 weeks in patients with RC tendinopathy. However, it is no more beneficial than a conventional exercise programme for the RC and scapular muscles. Based on the results, clinicians should take into account that performing two eccentric exercises twice a day is as effective as performing six concentric/eccentric exercises once a day in patients with RC tendinopathy.



Education, contrôle moteur ou renforcement?

Does the addition of motor control or strengthening exercises to education result in better outcomes for rotator cuff-related shoulder pain? A multiarm randomised controlled trial

Marc-Olivier Dubé ^{1,2} François Desmeules ^{3,4} Jeremy S Lewis ⁵
Jean-Sébastien Roy ^{1,2}

WHAT THIS STUDY ADDS

- ⇒ All three interventions (education only; education and motor control exercises; education and strengthening exercises) were effective in improving symptoms and functional limitations in individuals with RCRSP, but the addition of motor control or strengthening exercises did not lead to significantly better outcomes than education alone.
- ⇒ A high load/low repetition strengthening exercises regimen did not lead to additional strength improvement compared with education alone or education combined with motor control exercises.

Exercices supervisés ou à domicile?



Physiotherapy 98 (2012) 101–109

Physiotherapy

Systematic review

Exercise for rotator cuff tendinopathy: a systematic review

Chris Littlewood^{a,*}, Jon Ashton^b, Ken Chance-Larsen^c, Stephen May^c, Ben Sturrock^c

^a School of Health & Related Research, University of Sheffield, Regent Court, 30 Regent Street, Sheffield S1 4DA, UK

^b Physiotherapy Services, Doncaster Royal Infirmary, Armitage Road, Doncaster DN2 5LT, UK

^c Faculty of Health & Wellbeing, Sheffield Hallam University, Sheffield S10 2BP, UK

This systematic review summarises the results of four studies that have evaluated the effect of exercise programmes, incorporating loaded exercise, for rotator cuff tendinopathy. It is suggested that both home and supervised exercise programmes might be more effective than no intervention or placebo and as effective as minimal comparators, e.g. functional brace, or active comparators, e.g. multimodal physiotherapy, surgery.



Dosage

Effectiveness of Adding a Large Dose of Shoulder Strengthening to Current Nonoperative Care for Subacromial Impingement

A Pragmatic, Double-Blind Randomized Controlled Trial (SExSI Trial)

Mikkel Bek Clausen,^{*,†,‡} PhD, Per Hölmich,[†] DMSc, Prof., Michael Rathleff,^{§||} PhD, Prof., Thomas Bandholm,^{¶#} PhD, Prof., Karl Bang Christensen,^{**} PhD, Mette Kreutzfeldt Zebis,[‡] PhD, and Kristian Thorborg,^{†¶} PhD, Prof.

Investigation performed at the Sports Orthopedic Research Center–Copenhagen, Department of Orthopedic Surgery, Amager-Hvidovre Hospital, Institute of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark

Conclusion: Adding a large dose of shoulder strengthening to current nonoperative care for patients with subacromial impingement did not result in superior shoulder-specific patient-reported outcomes. Moreover, approximately half of all randomized patients did not achieve the PASS after 4 months of nonoperative care, leaving many of these patients with unacceptable symptoms. This study showed that adding more exercise is not a viable solution to this problem.



Conclusion?

SIMON LAFRANCE, PT, PhD^{1,2} • MAXIME CHARRON, PT, MSc² • MARC-OLIVIER DUBÉ, PT, PhD^{3,4,5}
FRANÇOIS DESMEULES, PT, PhD^{1,2} • JEAN-SÉBASTIEN ROY, PT, PhD^{3,4} • BIRGIT JUUL-KRISTENSEN, PT, PhD⁶
LEONORA KENNEDY, PT, MSc⁷ • KAREN MCCREESH, PT, PhD^{7,8}

The Efficacy of Exercise Therapy for Rotator Cuff–Related Shoulder Pain According to the FITT Principle: A Systematic Review With Meta-analyses

Principe FITT

Fréquence: Nombre de jours par semaine

Intensité: Nombre de répétitions par session, la charge totale par session, ou la résistance utilisée

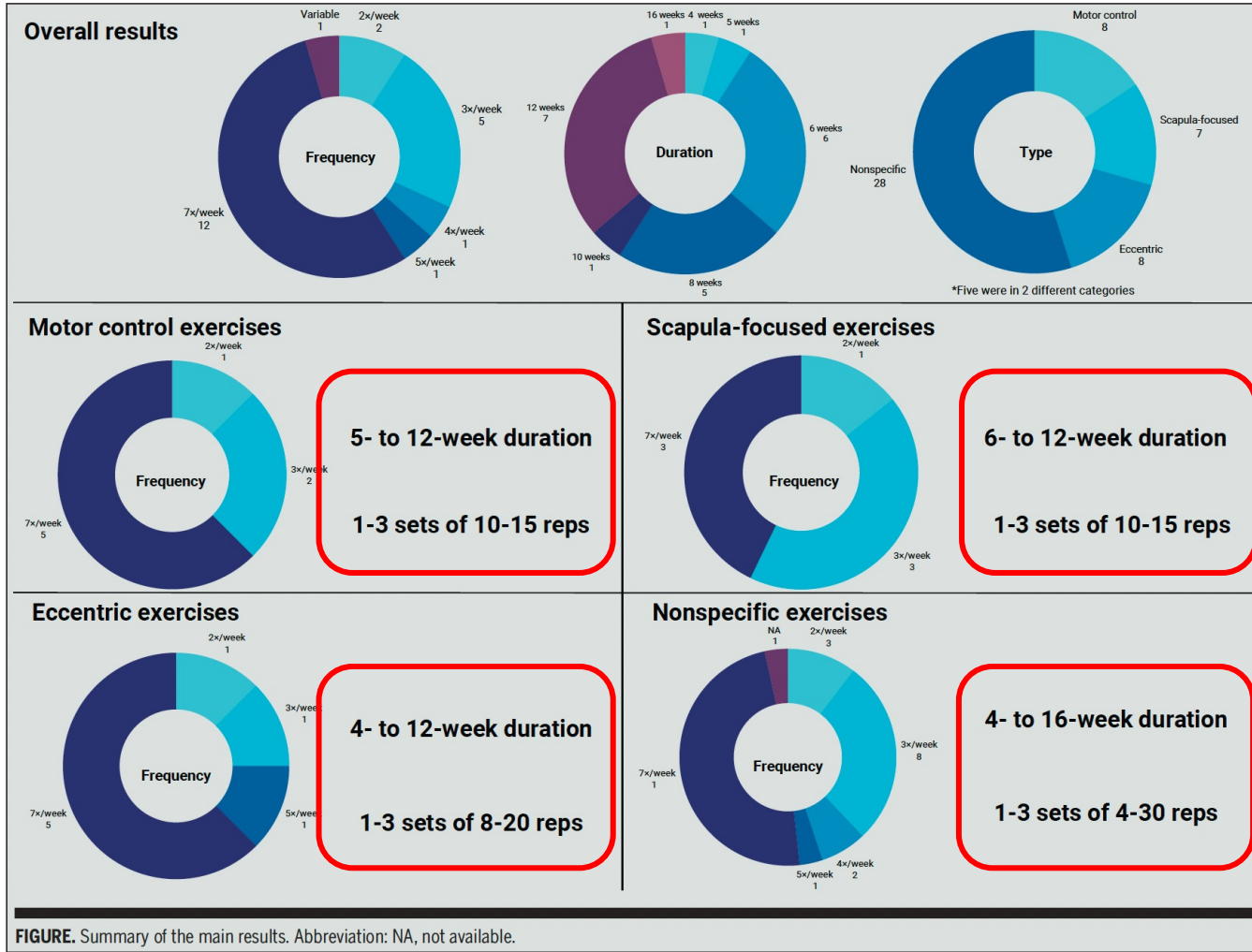
Temps: Durée du programme en semaine

Type: Catégories d'exercices

(contrôle moteur/exercices scapulaires/exercices excentriques/ exercices non-spécifiques)



Conclusion?



1. Motor control exercise programs: focused on specific muscle control and/or coordination, dynamic muscular stabilization exercises, proprioceptive exercises, specific movements, or movement control exercises.^{27,48}
2. Scapula-focused exercise programs: focused on scapular muscles and/or aimed at increasing scapular postural awareness and/or stability.³⁹
3. Eccentric exercise programs: focused on eccentric movements that involve lengthening of the rotator cuff and/or other shoulder muscles under the load of the resistance.⁴⁶
4. Nonspecific exercise programs: generic shoulder resistance or strengthening exercise programs without emphasis on muscle control, scapular muscles/stability, or eccentric exercises.²⁷

Conclusion?

Therapeutic exercise for rotator cuff tendinopathy: a systematic review of contextual factors and prescription parameters

Chris Littlewood^a, Peter Malliaras^b and Ken Chance-Larsen^c

- L'inclusion de la résistance semble avoir un effet même si le niveau de résistance n'est pas défini (basé sur douleur/ pas de douleur permise, et "progression" dans le temps , pas de véritable résistance)
- Le nombre optimal de répétitions est aussi pas clair même si plus de répétitions semblent apporter de meilleurs résultats (8-50 reps)
- Le programme doit apporter dans résultats cliniquement significatifs dans les 12 semaines, et des progrès doivent être présent dans les 6 semaines.

Conclusion?

“Restoring That Faith in My Shoulder”: A Qualitative Investigation of How and Why Exercise Therapy Influenced the Clinical Outcomes of Individuals With Rotator Cuff–Related Shoulder Pain

Jared K. Powell , BExSc/BBus, DPhty^{1,*}, Nathalia Costa, PhD, BPhy (Honours)², Ben Schram, BExSc, DPhty, PhD, Professor¹, Wayne Hing, PhD, FNZCP, Professor¹, Jeremy Lewis, PhD, FCSP^{3,4}

Condition 1

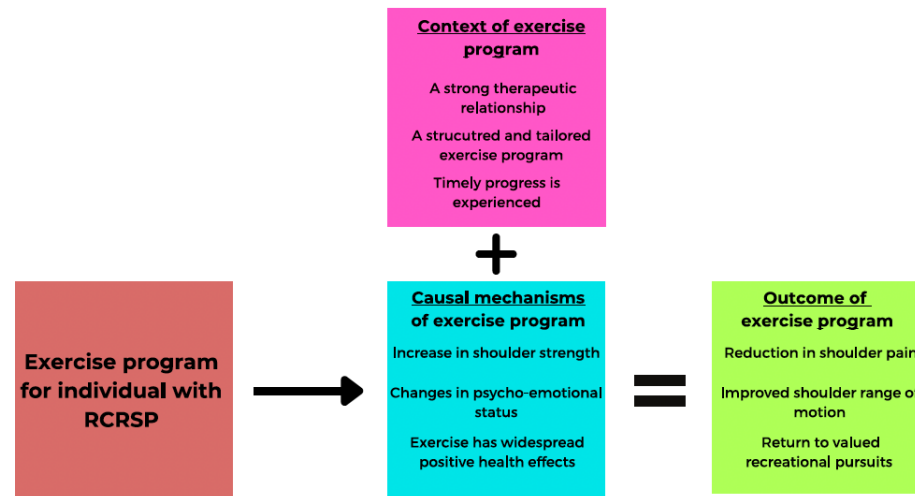
Une relation thérapeutique forte est la base pour une amélioration clinique par les exercices.

Condition 2

Le programme d'exercices doit être structuré et « sur mesure » en fonction du patient.

Condition 3

L'amélioration clinique dans le temps avec les exercices est important.



*e. The relationship between Intervention-Context-Mechanism-Outcome for individuals with rotator cuff-related shoulder pain (RCRSP).



Prise en charge



Principes généraux de la rééducation

Prise en charge

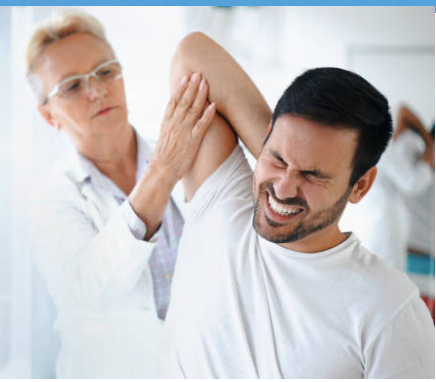
Review

The challenge of the sporting shoulder: From injury prevention through sport-specific rehabilitation toward return to play

Ann M. Cools^{a,b,*}, Annelies G. Maenhout^a, Fran Vanderstukken^a, Philippe Declève^{a,c}, Fredrik R. Johansson^d, Dorien Borms^a



L'irritabilité



Staged Approach for Rehabilitation Classification: Shoulder Disorders (STAR–Shoulder)

Philip W. McClure, Lori A. Michener

- Douleur >7/10
- Douleur la nuit/en dormant
- Douleur constante au repos
- Douleur avant la fin d'amplitude (examen clinique)
- Douleur irradiant au-dessus du coude
- Handicap élevé

- Douleur modérée 4-6 /10
- Douleur variable la nuit
- Pas de douleur au repos
- Douleur en fin d'amplitude (examen clinique)
- Douleur dans le bras
- Handicap modérée

- Douleur < 3/10
- Pas de douleur la nuit
- Pas de douleur au repos
- Douleur minimale lors de la surpression (examen clinique)
- Douleur région épaule
- Handicap faible



Prise en charge

Irritabilité élevée

- **“décharger” le tendon**
 - Management de la douleur
 - Isométrique dans la direction D+, D+ 4-5/10, 30-45", 5x, plusieurs x/j
 - Exercices fonctionnels “low load” (<20% EMG)
 - Pas de “soft tissue” sur le tendon
 - Pas de stretching

irritabilité faible

- **Charge “suffisante” sur le tendon**
 - charge basé sur la D+
 - D+ monitoré à 4-5/10
 - Exercices exc: 2 exercices, 3x15, 2x/j, min 6 semaines
 - Soft tissue permis si besoin
 - Stretching permis si besoin

Exercices sur base de l'EMG

- EMG est une **technique** électro-diagnostique.
- Permet l'évaluation et l'enregistrement de **l'activité électrique** produite par les muscles musculo-squelettiques.
- Détecte le potentiel électrique généré par les cellules musculaires **quand celles-ci sont activées**.
- Les signaux peuvent être analysés pour détecter des anomalies, niveaux d'activation, fatigue musculaire ou timing de recrutement.
- 2 méthodes: Electrodes de surface et fine-wire.
- **Plus le signal EMG est élevé durant un mouvement, plus le muscle est activé** pendant l'exercice. (>50% = renforcement)
- Même si il y a une association entre la force musculaire et l'activité EMG **cette relation n'est pas linéaire**, le signal EMG est influencé par différents facteurs comme l'épaisseur de la peau, artefacts et signaux des autres muscles.
- L'EMG est normalisé pour permettre les comparaisons intra-et inter sujets.
- Dans les études on parle souvent de MVC (contraction maximale volontaire) et est exprimée en %.

Limitations

- Tenir compte des **limitations biomécaniques** (empty can, position des exercices,...)
- Commencez par des exercices en décharge puis avec charge
- Réalisée sur des sujets sains



Prise en charge

Irritabilité élevée



isométrique



Exercices fonctionnels "low load" (<20% EMG)

Prise en charge

Open access

Original article

BMJ Open
Sport &
Exercise
Medicine

Cryotherapy or gradual reloading exercises in acute presentations of rotator cuff tendinopathy: a randomised controlled trial

Frédérique Dupuis,^{1,2} Eva Barrett,³ Marc-Olivier Dubé,^{1,2} Karen M McCreesh,^{4,5} Jeremy S Lewis,^{6,7} Jean-Sébastien Roy^{1,2}

CONCLUSION

Our results do not demonstrate any short-term differences between cryotherapy and a gradual reloading exercise programme in improving pain and function in the acute RC tendinopathy population. Considering the acute pain context, time could be a significant factor in reducing pain and functional disability, making negligible the effect of a reloading exercises or the use of ice in the short term.

Limitations

There are some limitations to this study. First, there was no 'no treatment group' included. Therefore, resolution of symptoms due to the natural healing process cannot be excluded as the main reason of improvement. Future studies should measure tendon thickness alongside AHD, as this is more likely to change in the acute stage of injury.³⁹ Finally, there was a low follow-up rate at week 6, especially in the exercises group, which means that the results could have been different had we achieved a better follow-up in the latter stage of the study.

Prise en charge

irritabilité faible

[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD² • CHRIS LITTLEWOOD, PhD³
TIM ACKLAND, PhD⁴ • ALLAN WANG, FRACS, PhD⁴

A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair

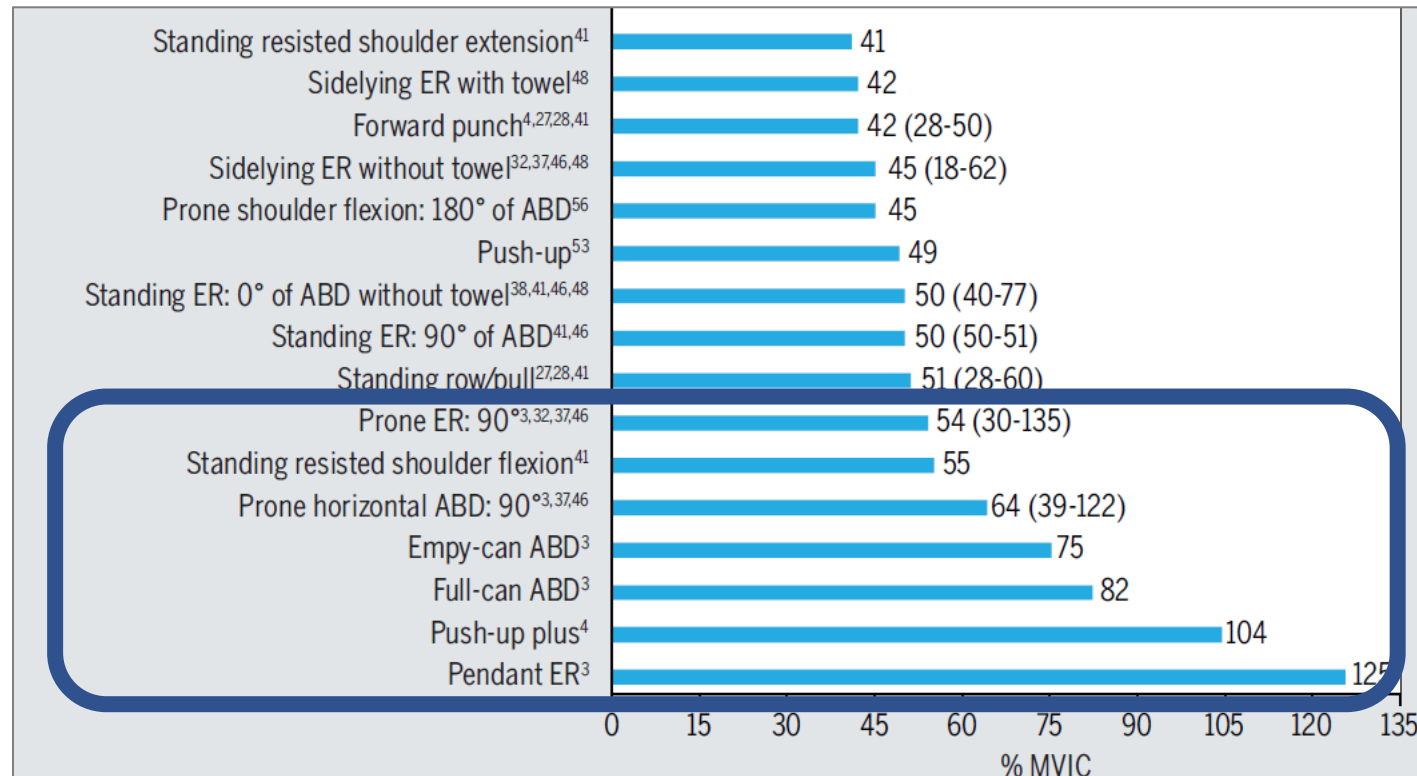
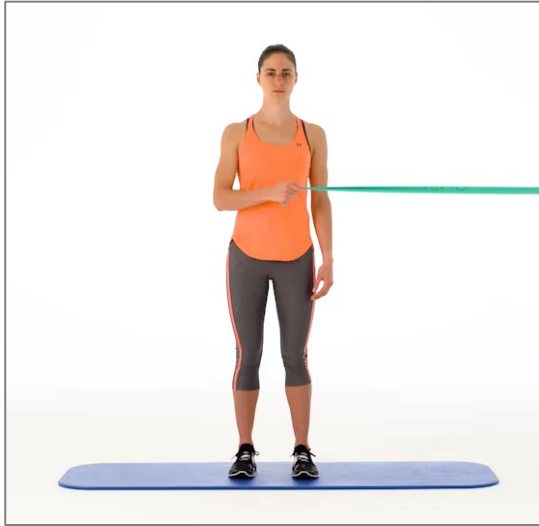


FIGURE 3. Infraspinatus pooled means (range) of percent MVIC ranking of exercises. Abbreviations: ABD, abduction; ER, external rotation; IR, internal rotation; MVIC, maximal voluntary isometric contraction.



Prise en charge



complexité...

Exercise prescription for overhead athletes with shoulder pathology: a systematic review with best evidence synthesis

Alexis A Wright,¹ Eric J Hegedus,¹ Daniel T Tarara,² Samantha C Ray,³
Steven L Dischiavi¹

Analytique



Chaîne cinétique



Fonctionnelle
pliométrie

Table 3 Best evidence synthesis in support of exercise prescription for the overhead athlete

Type of exercise (UE)	Recommendation	Strength of recommendation (A–F)
Open chain UE exercise below 90°	Based on consistent findings from level II and III studies, UE exercises below 90° shoulder elevation have evidence to support their use in overhead athletes with shoulder pathology. Expert opinion is in agreement with research findings	B
Open chain UE exercise above 90°	Based on consistent findings from level II and III studies, UE exercises above 90° of elevation have evidence to support their use in overhead athletes with shoulder pathology. Expert opinion is in agreement with research findings	C
Closed chain UE exercise	Based on consistent findings from level II and III studies, closed chain UE exercises have evidence to support their use in overhead athletes with shoulder pathology. Expert opinion is in agreement with research findings	B
Isokinetic exercise of the UE	Experts recommend isokinetic exercises both below and above 90° shoulder elevation in overhead athletes with shoulder pathology	D
Plyometric exercise	Experts recommend plyometric exercises both below and above 90° shoulder elevation in overhead athletes with shoulder pathology	D
Kinetic chain/core/lower extremity exercise	Experts recommend kinetic chain/core/lower extremity exercises in overhead athletes with shoulder pathology	D
Sport-specific training	Experts recommend sport-specific training in overhead athletes with shoulder pathology	D

For strength of recommendation: A=signifies consistent findings in >2 level I studies; B=consistent findings in >2 level II or III studies or =2 level I studies; C=findings from >2 level IV studies or =2 level II or III studies; D=findings from >2 level V studies; F=conflicting findings or findings from =2 level V studies.

UE, upper extremity



Analytique & chaîne cinétique

Analytique

- Effets sur déficit de force local
- Pas toujours associé à une blessure d'épaule
- Ne tient pas compte du schéma d'activation global

Chaîne cinétique

- Fun
- Travail global

Analytique & chaîne cinétique

Role of the kinetic chain in shoulder rehabilitation: does incorporating the trunk and lower limb into shoulder exercise regimes influence shoulder muscle recruitment patterns? Systematic review of electromyography studies

Eleanor Richardson ^{1,2} Jeremy S Lewis ^{3,4,5} Jo Gibson, ^{6,7} Chris Morgan, ⁸
Mark Halaki, ⁹ Karen Ginn, ⁹ Gillian Yeowell ²

What is already known?

- ▶ Kinetic chain (KC) exercises are often advocated over an isolated local shoulder exercise approach during the rehabilitation of the shoulder, but its relevance is not well understood.
- ▶ This review suggests that integrating the KC into shoulder rehabilitation exercises may enhance axioscapular muscle recruitment, produce lower trapezius muscle ratios and reduce the demands on the rotator cuff when compared with non-kinetic chain (nKC) exercises.

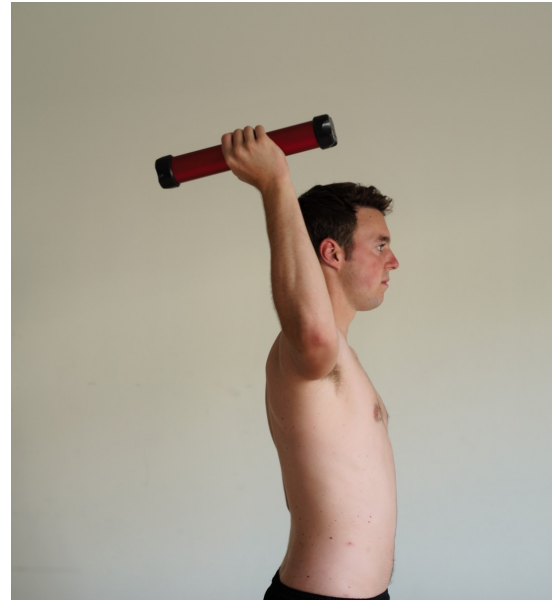
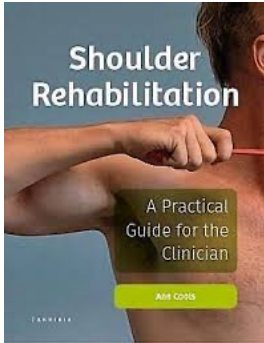
What are the new findings?

- ▶ How the KC is integrated is key: stepping appears preferable to squatting.
- ▶ KC exercises using lower quadrant weight transference may reduce the demands on the rotator cuff.
nKC exercises may be preferable when the rehabilitation goal is to isolate and strengthen the rotator cuff.

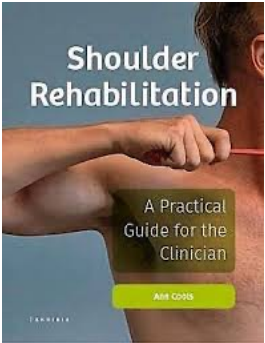




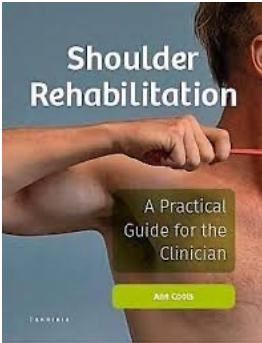
Pliométrie



Excentrique



Excentrique

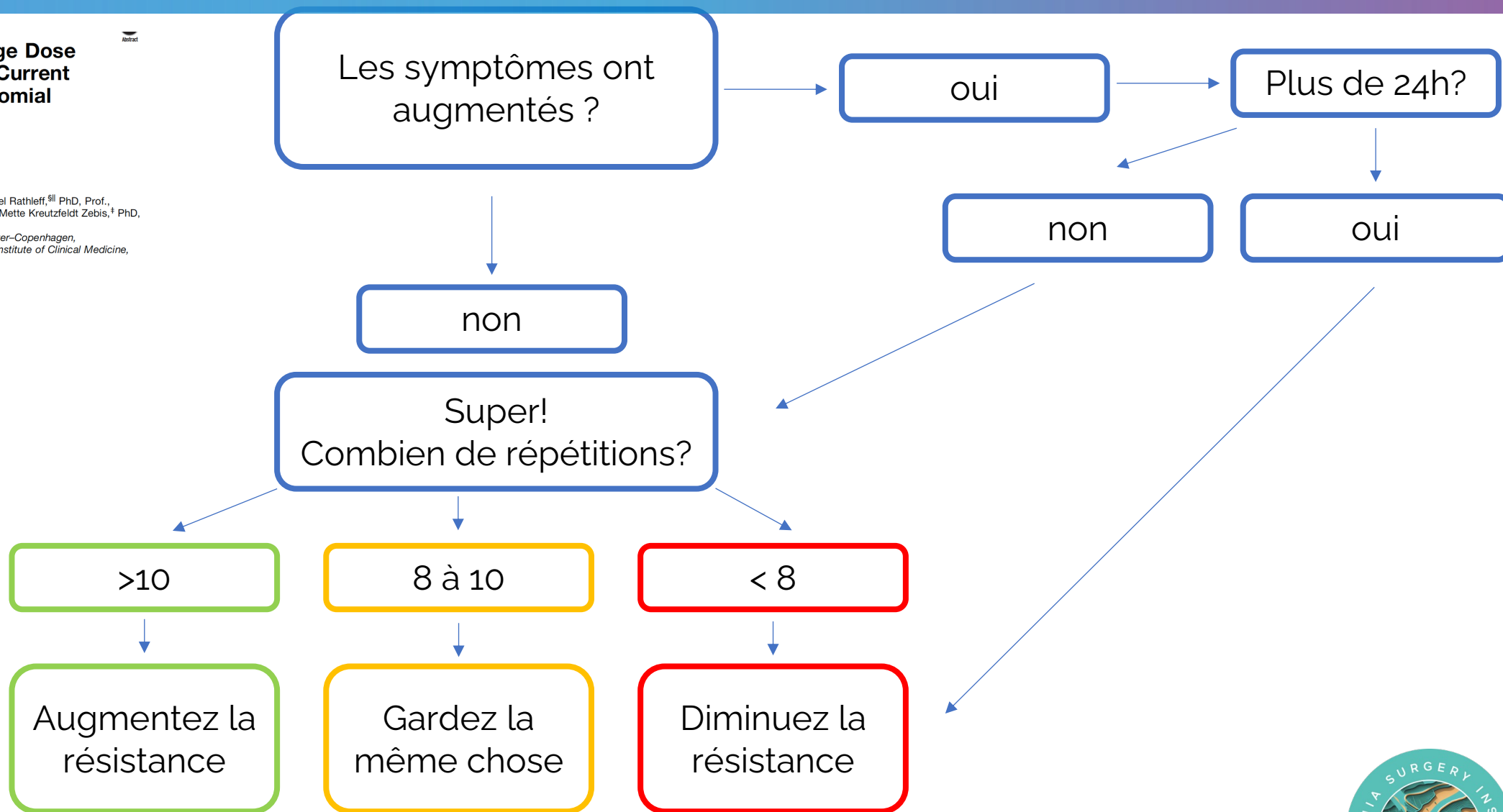


Exemple

Effectiveness of Adding a Large Dose of Shoulder Strengthening to Current Nonoperative Care for Subacromial Impingement

A Pragmatic, Double-Blind Randomized Controlled Trial (SExSI Trial)

Mikkel Bek Clausen,^{**††} PhD, Per Hölmich,[†] DMSc, Prof., Michael Rathleff,^{§§} PhD, Prof., Thomas Bandholm,^{¶¶} PhD, Prof., Karl Bang Christensen,^{**} PhD, Mette Kreutzfeldt Zebis,[‡] PhD, and Kristian Thorborg,^{†‡} PhD, Prof.
Investigation performed at the Sports Orthopedic Research Center-Copenhagen, Department of Orthopedic Surgery, Amager-Hvidovre Hospital, Institute of Clinical Medicine, University of Copenhagen, Copenhagen, Denmark



Evaluation de la progression

Rotator Cuff Tendinopathy Diagnosis, Non-surgical Medical Care and Rehabilitation: A Clinical Practice Guideline

Article in Journal of Orthopaedic and Sports Physical Therapy - January 2025

DOI: 10.2519/jospt.2025.13182

TABLE 5: MCID values of Self-reported Questionnaires (level I evidence)

Questionnaires	Score Range	Scale direction (higher score signs a better or worse condition)	Construct(s) measured	MCID
Level I evidence				
DASH	0-100	Worse	Pain, disability, and other symptoms	Median: 10.2 (range 4.4 – 25.4; 6 studies)
OSS	0-48	Better	Pain, disability, and other symptoms	Median: 5.3 (range 4/48 – 14.7; 8 studies)
SST	0-12	Better	Pain, disability, and other symptoms	Median: 1.8 (range 1.5/12 – 2.1; 2 studies)
CMS	0-100	Better	Pain, disability other symptoms, disability, ROM & strength	Median: 8.3 (range 3 – 16.6; 10 studies)
WORC	0-2100	Worse	Pain, disability, other symptoms, emotions	Mean: 275.7 (range 245.3 – 300; 4 studies)
Pain VAS - overall	0-10	Worse	Pain	Median: 1.5 (range 1.4 – 1.6; 2 studies)

Legend: DASH: Disabilities of the Arm, Shoulder and Hand; OSS: Oxford Shoulder Score; SST: Simple Shoulder Test; CMS: Constant Murley Score; WORC: Western Ontario Rotator Cuff Index; VAS: Visual Analogue Scale; PNRS: Pain Numeric Rating Scale; ASES: American Shoulder and Elbow Surgeons Shoulder Score.

TABLE 6: MCID values of Self-reported Questionnaires (level II evidence)

Questionnaires	Score Range	Scale direction (higher score signs a better or worse condition)	Construct(s) measured	MCID
Quick DASH	0-100	Worse	Pain, disability, and other symptoms	Median: 13.4/100 (1 study)
PNRS	0-10	Worse	Pain	Median: 3.5/10 (range 1.1 – 6.3; 5 studies)
ASES	0-100	Better	Pain, disability, and other symptoms	6.4 ⁴¹ Mean: 15.5 (range 6.4 – 21.9) ⁸⁴
Penn	0-100	Better	Symptoms, satisfaction, and disability	1.4 ⁴¹
SPADI	0-100	Worse	Pain, disability, and other symptoms	8 ⁴¹

Legend: DASH: Disabilities of the Arm, Shoulder and Hand; PNRS: Pain Numeric Rating Scale; ASES: American Shoulder and Elbow Surgeons Shoulder Score; Penn: Pennsylvania Shoulder Score; SPADI: Shoulder Pain and Disability Index.



Retour aux sports

VOIR RTS



Rupture de la coiffe des rotateurs non-opérée et opérée



Traumatique – aigue
patients jeunes
Chirurgie ?

Atraumatique - dégénératif

Processus normal
Patients plus âgés
Souvent asymptomatique

Rééducation en priorité

Rotator cuff changes in asymptomatic adults. The effect of age, hand dominance and gender.

C Milgrom et al. JBJS(B), 1995. 77B(2): 288 - 298

90 asymptomatic adults, 30-60y : 47f, 43m. USS.

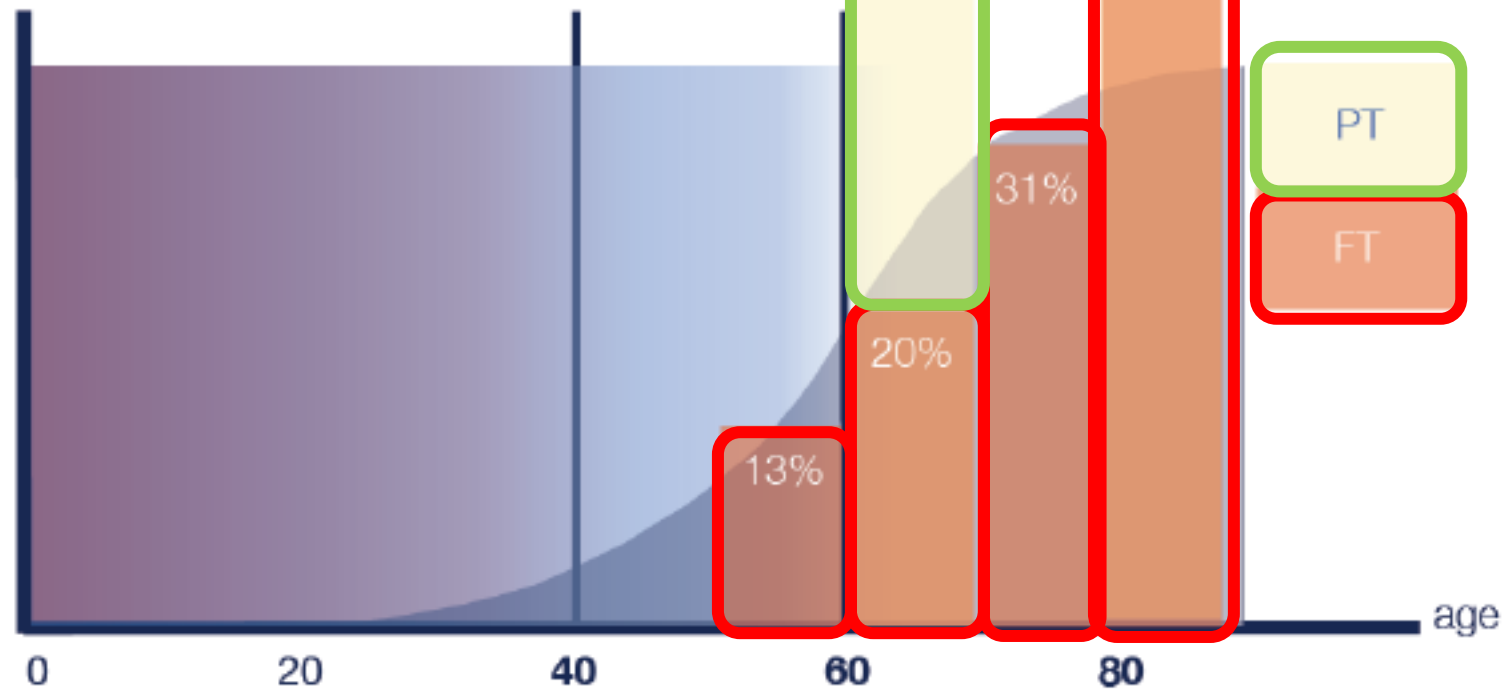
No difference in impingement findings for gender, dominance, exertional activities

Age-related prevalence of rotator cuff tears in asymptomatic shoulders.

S Templehof, S Rupp, R Seil. JSES, 1999. 8(4): 296 - 299.

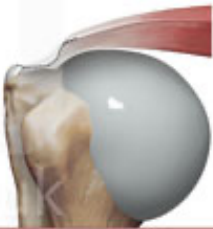
411 volunteers. USS.

damage to the
tendon structure



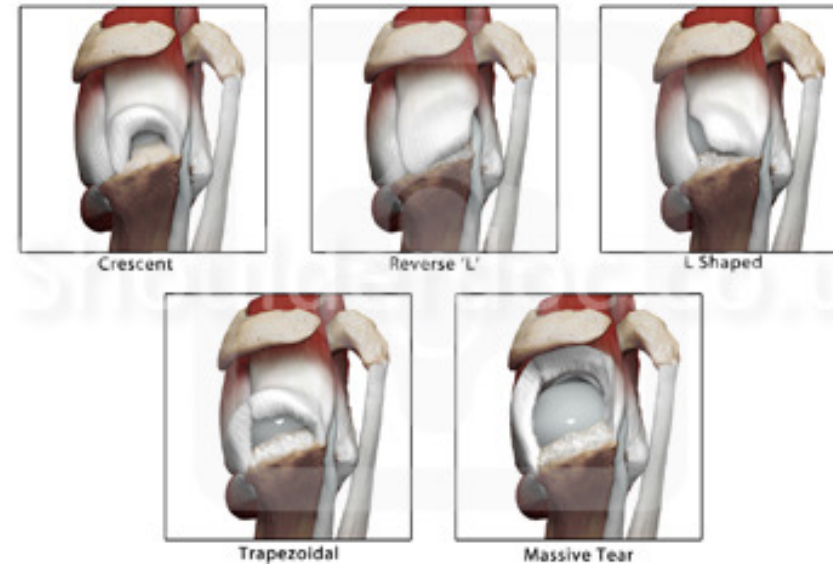
Partial tears

CLASSIFICATION OF PARTIAL TEARS
Based on depth of defect

Articular surface			
			
	GRADE 1 <1/4 Thickness (-3mm)	GRADE 2 <1/2 Thickness (3-6mm)	GRADE 3 >1/2 Thickness (+6mm)



Full thickness tear



Est-ce que la rupture s'élargit si on ne fait rien?
Est – ce qu'il y a des facteurs de risques qui influencent l'augmentation de la rupture?



174 shoulders during 19 months

Age, sex, hand dominance,
smoking, alcohol, hypercholesterolemia,
sports participations, tear type and size,
jobs.

- 47% showed tears progression
(progression > 2mm)
- Risk factors: medium size tear, full
thickness tear and smoking

Risk Factors for Tear Progression in Symptomatic Rotator Cuff Tears

A Prospective Study of 174 Shoulders

Nobuyuki Yamamoto,* MD, PhD, Mitsuyoshi Mineta,* MD, Jun Kawakami,* MD,
Hirotaka Sano,* MD, and Eiji Itoi,** MD, PhD
Investigation performed at the Tohoku University School of Medicine, Sendai, Japan

Mais l'impact
sur la fonction?

TABLE 1
Patient Demographics at the Time
of the Initial MRI Examination^a

	Value
Patients, n	171
Shoulders, n	174
Age, mean (range), y	66.9 (47-83)
Sex, n	
Male	97
Female	74
Follow-up, mean (range), mo	19 (12-60)
Tear size, mean $\pm$ SD, mm	
Length	17.5 $\pm$ 13.7
Width	14.7 $\pm$ 10.6
Tear size, ^b n (%)	
Small	78 (45)
Medium	58 (33)
Large	33 (19)
Massive	5 (3)
Tear type	
Full thickness, n	91
Partial thickness, n	83
Bursal, n (%)	49 (59)
Articular, n (%)	20 (24)
Intratendinous, n (%)	11 (13)
Combined, n (%)	3 (4)

^aMRI, magnetic resonance imaging.

^bTear size categories based on the classification of DeOrto and Cofield.⁵

Conclusion: The tear size of symptomatic rotator cuff tears progressed in 47% of the shoulders during a mean of 19 months, and the speed of progression was 3.8 mm/y in length and 2.0 mm/y in width. The risk factors for tear progression were (1) a medium-sized tear, (2) a full-thickness tear, and (3) smoking.

Est-ce que si ma rupture s'élargit ma fonction au niveau de l'épaule va se réduire?





The natural course of nonoperatively treated rotator cuff tears: an 8.8-year follow-up of tear anatomy and clinical outcome in 49 patients



Stefan Moosmayer, MD, PhD^{a,*}, Anne V. Gärtner, PT^b, Rana Tariq, MD^c

^aDepartment of Orthopedic Surgery, Martina Hansens Hospital, Sandvika, Norway

^bDepartment of Physiotherapy, Martina Hansens Hospital, Sandvika, Norway

^cDepartment of Radiology, Oslo University Hospital, Ullevål, Oslo, Norway

↑ taille rupture, atrophie et dégénération graisseuse

Mais, résultats fonctionnels satisfaisants

traitement conservateur si:

- Moins de 3cm
- Pas d'implication du sous scapulaire
- Pas d'atrophie musculaire avancée

Conclusion

Our study shows that most nonrepaired small to moderate-sized rotator cuff tears developed anatomic deterioration in the form of increase of tear size, muscle atrophy, or fatty degeneration during a period of 8.8 years. Deterioration was often moderate, and average functional outcome was satisfactory. Negative prognostic factors for tendon repair together with a poor functional outcome were found in 20% of patients. Our results support earlier reports that nonoperative treatment can be considered a primary treatment measure for rotator cuff tears with tear sizes not exceeding 3 cm, no involvement of the subscapularis, and absence of advanced muscle atrophy and degeneration.^{13,21} Patients who select nonoperative treatment should be informed that with a time perspective of 9 years, outcomes are usually satisfactory or better, but there is a risk for recurrence of symptoms and for a deterioration of anatomic factors with importance for the prognosis of a late tear repair.



Quels facteurs peuvent influencer le choix entre une chirurgie ou un traitement conservateur?



Surgical Versus Nonsurgical Management of Rotator Cuff Tears

Predictors of Treatment Allocation

Christopher Kweon,* MD, Joel J. Gagnier,** PhD, Christopher B. Robbins,* PhD, Asheesh Bedi,* MD, James E. Carpenter,* MD, and Bruce S. Miller,** MD, MS
Investigation performed at the University of Michigan, Ann Arbor, Michigan, USA

196 patients with FT tears.

Size of cuff tear

Age

112 -> chirurgie
84-> conservateur

Smoking status

Sex

jeunes, symptômes depuis moins d'un an, BMI normal

Patient derived outcome scores

BMI

Plus âgé, symptômes depuis plus de 1 an, BMI élevé

Duration of symptoms

Functional comorbidity index

Y a t'il une différence entre une opération arthroscopique ou à ciel ouvert sur les résultats?





■ SHOULDER AND ELBOW

Effectiveness of open and arthroscopic rotator cuff repair (UKUFF)

A RANDOMISED CONTROLLED TRIAL

Table V. Imaging at baseline and one year post-operatively

	Arthroscopic surgery group (n = 136) (n, %)	Open surgery group (n = 137) (n, %)	p-value
Size of tear			
Small/medium	103 (75.7)	103 (75.2)	
Large/massive	33 (24.3)	34 (24.8)	
Received any surgery	100 (73.5)	114 (83.2)	
Rotator cuff repairs performed	72 (63 arthroscopic, 9 arthroscopic converted to open)	90 (85 open, 5 arthroscopic)	
Scans performed at 12 mths	69	83	
Scan results (all tears)			
Re-tear	32 (46.4)	32 (38.6)	0.256
Healed repair	32 (46.4)	47 (56.6)	
Inconclusive	1 (1.4)	1 (1.2)	
Missing	4 (5.8)	3 (3.6)	
Size of re-tear (all tears)			
Small/medium	16 (50.0)	20 (62.5)	
Large/massive	13 (40.6)	10 (31.3)	
Not clear	3 (9.4)	2 (6.3)	

Conclusion

There is no evidence of difference in effectiveness between open and arthroscopic repair of rotator cuff tears. The rate of re-tear is high in both groups, for all sizes of tear and ages and this adversely affects the outcome.



Que se passe t'il si on ne répare pas la coiffe?



What happens to patients when we do not repair their cuff tears? Five-year rotator cuff quality-of-life index outcomes following nonoperative treatment of patients with full-thickness rotator cuff tears

Richard S. Boorman, MD, FRCSC^{a,b,*}, Kristie D. More, MSc^b, Robert M. Hollinshead, MD, FRCSC^{a,b}, James P. Wiley, MD^b, Nicholas G. Mohtadi, MD, FRCSC^{a,b}, Ian K.Y. Lo, MD, FRCSC^a, Kelly R. Brett, MD^b

Background: The purpose of this study was to examine 5-year outcomes in a prospective cohort of patients previously enrolled in a nonoperative rotator cuff tear treatment program.

Methods: Patients with chronic (>3 months), full-thickness rotator cuff tears (demonstrated on imaging) who were referred to 1 of 2 senior shoulder surgeons were enrolled in the study between October 2008 and September 2010. They participated in a comprehensive, nonoperative, home-based treatment program. After 3 months, the outcome in these patients was defined as “successful” or “failed.” Patients in the successful group were essentially asymptomatic and did not require surgery. Patients in the failed group were symptomatic and consented to undergo surgical repair. All patients were followed up at 1 year, 2 years, and 5 or more years.

Results: At 5 or more years, all patients were contacted for follow-up; the response rate was 84%. Approximately 75% of patients remained successfully treated with nonoperative treatment at 5 years and reported a mean rotator cuff quality-of-life index score of 83 of 100 (SD, 16). Furthermore, between 2 and 5 years, only 3 patients who had previously been defined as having a successful outcome became more symptomatic and underwent surgical rotator cuff repair. Those in whom nonoperative treatment

Conclusion

Nonoperative treatment is an effective and lasting option for many patients with a chronic, full-thickness rotator cuff tear. Patients who subsequently ended up requiring surgical repair had similar outcomes to those who underwent surgery early in the study, as well as those in whom nonoperative treatment was successful. While some

clinicians may argue that nonoperative treatment delays inevitable surgical repair, our study shows that patients can do very well over time, no matter whether treated operatively or nonoperatively.



Est-ce que la kinésithérapie peut aider?



Effectiveness of Physical Therapy in Treating Atraumatic Full Thickness Rotator Cuff Tears. A Multicenter Prospective Cohort Study

The Moon Shoulder Group, John E. Kuhn, MD, MS, Warren R. Dunn, MD, MPH, Rosemary Sanders, BA, Qi An, MS, Keith M. Baumgarten, MD, Julie Y. Bishop, MD, Robert H. Brophy, MD, James L. Carey, MD, MPH, Brian G. Holloway, MD, Grant L. Jones, MD, C. Benjamin Ma, MD, Robert G. Marx, MD, MS, Eric C. McCarty, MD, Sourav K. Poddar, MD, Matthew V. Smith, MD, Edwin E. Spencer, MD, Armando F. Vidal, MD, Brian R. Wolf, MD, MS, and Rick W. Wright, MD



452 participants
Atraumatic full thickness tears



kinésithérapie

6 semaines

guéri

amélioré

Pas mieux

12 semaines

guéri

amélioré

Pas mieux



IMPROVEMENT

6 semaines
12 semaines

25%

6 semaines
12 semaines

75%



Operative versus nonoperative treatment for the management of full-thickness rotator cuff tears: a systematic review and meta-analysis

Christine C. Piper, MD^{a,*}, Alice J. Hughes, MD^a, Yan Ma, PhD^b, Haijun Wang, PhD^b, Andrew S. Neviaser, MD^a

269 patients
59 à 65 ans

Différences au score de Constant et VAS n'a pas atteint la différence minimale pour être considérée comme cliniquement significatif (10.4 CS - 1,4 EVA)

Surgery or conservative treatment for rotator cuff tear: a meta-analysis

Anssi Ryösä, Katri Laimi, Ville Äärimaa, Kaisa Lehtimäki, Juha Kukkonen & Mikhail Saltychev

Results: Three identified RCTs involved 252 participants (123 cases and 129 controls). The risk of bias was considered low for all three RCTs. For Constant score, statistically insignificant effect size was 5.6 (95% CI –0.41 to 11.62) points in 1-year follow up favouring surgery and below the level of minimal clinically important difference. The respective difference in pain reduction was –0.93 (95% CI –1.65 to –0.21) cm on a 0–10 pain visual analogue scale favouring surgery. The difference was statistically significant ($p = 0.012$) in 1-year follow up but below the level of minimal clinically important difference.

Conclusion: There is limited evidence that surgery is not more effective in treating rotator cuff tear than conservative treatment alone. Thus, a conservative approach is advocated as the initial treatment modality.

► IMPLICATIONS FOR REHABILITATION

- There is limited evidence that surgery is not more effective in treating rotator cuff tear than conservative treatment alone.
- There was no clinically significant difference between surgery and active physiotherapy in 1-year follow-up in improving Constant score or reducing pain caused by rotator cuff tear.
- As physiotherapy is less prone to complications and less expensive than surgery, a conservative approach is advocated as the initial treatment modality to rotator cuff tears.

■ SHOULDER AND ELBOW

Treatment of non-traumatic rotator cuff tears

A RANDOMISED CONTROLLED TRIAL WITH ONE-YEAR CLINICAL RESULTS

Group 1= physiothérapie

Group 2= acromioplastie and physiothérapie

Group 3= suture, acromioplastie and physiothérapie

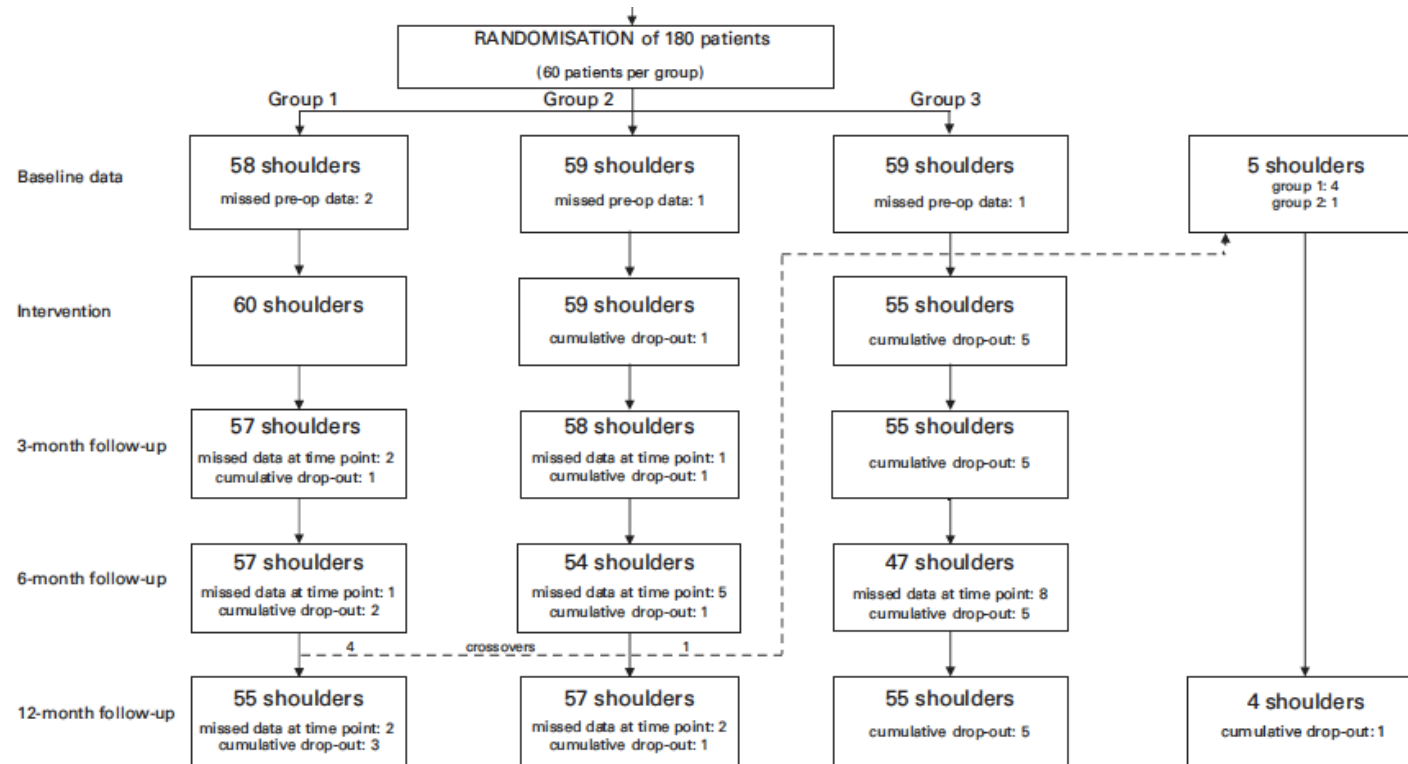


Fig. 1

Flow chart showing the shoulders through the study (Group 1, physiotherapy; Group 2, acromioplasty and physiotherapy; Group 3, rotator cuff repair, acromioplasty and physiotherapy).

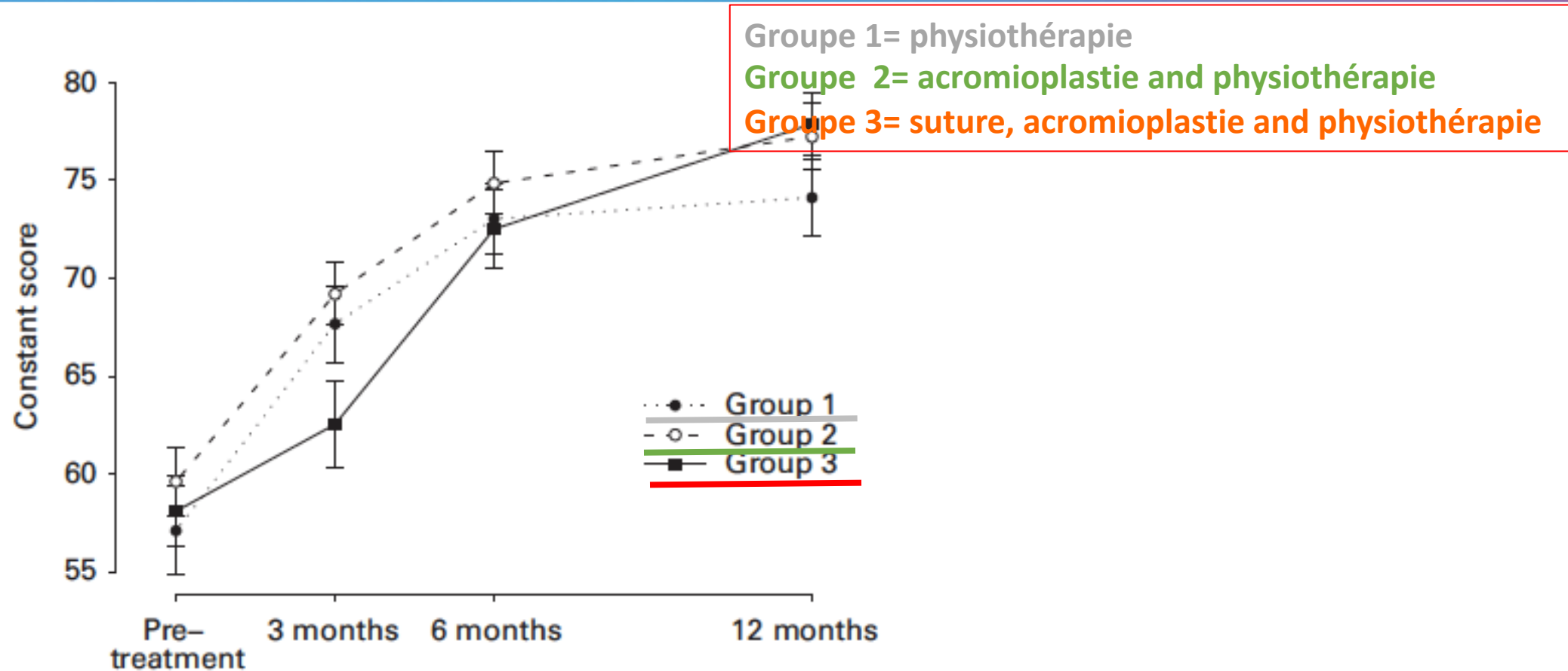


Fig. 2

Graph showing total Constant score points in the three treatment groups. Whiskers indicate standard deviation (Group 1, physiotherapy; Group 2, acromioplasty and physiotherapy; Group 3, rotator cuff repair, acromioplasty and physiotherapy).

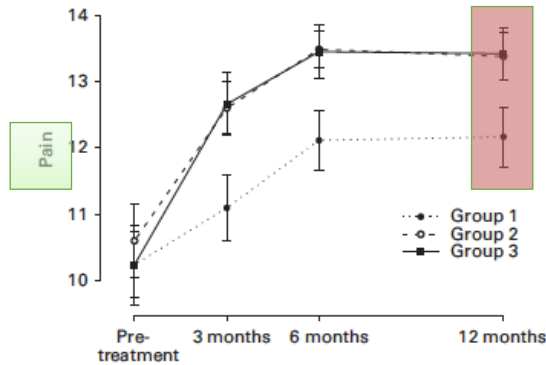


Fig. 3a

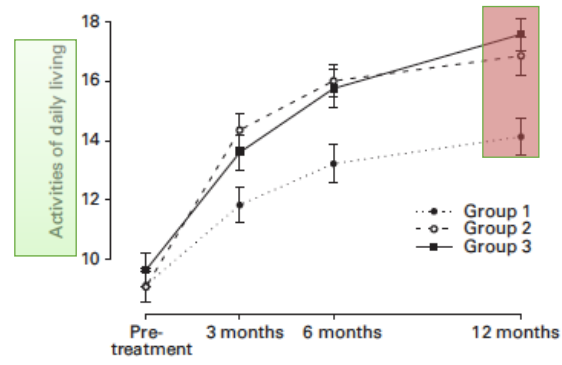


Fig. 3b

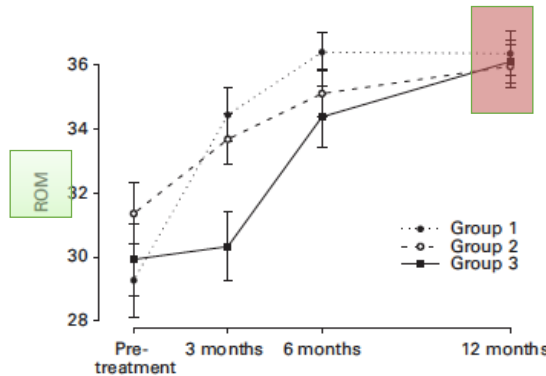


Fig. 3c

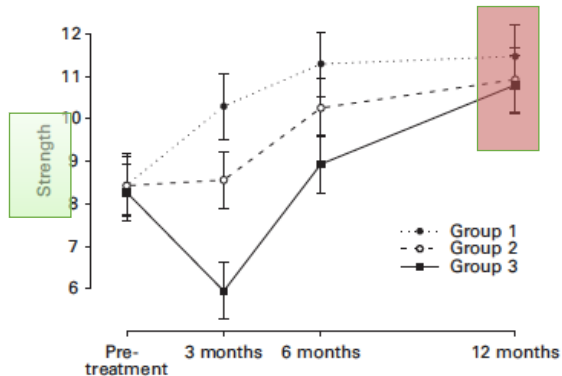
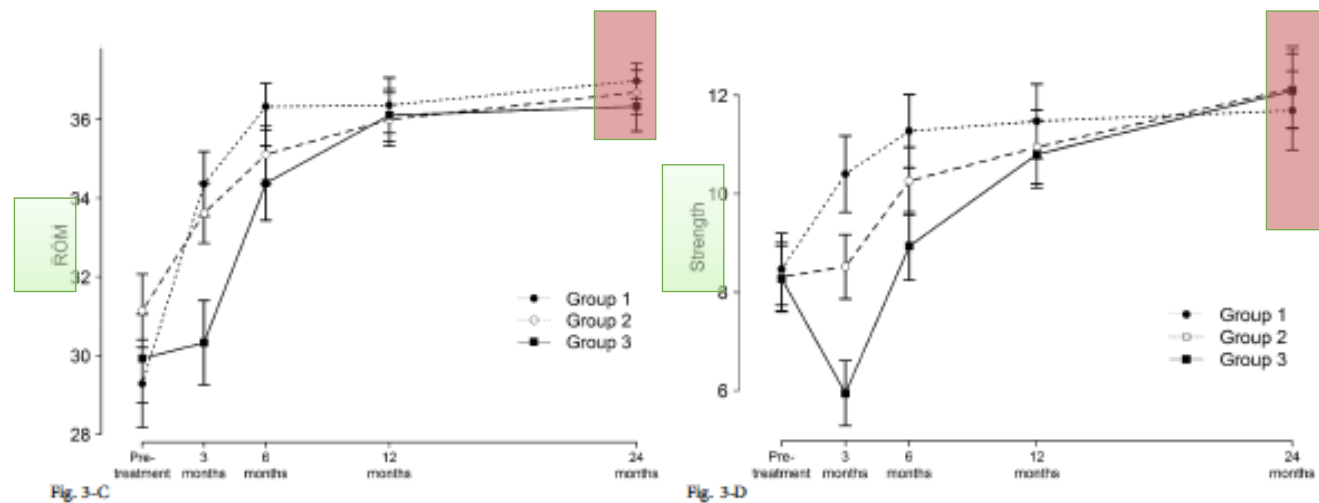
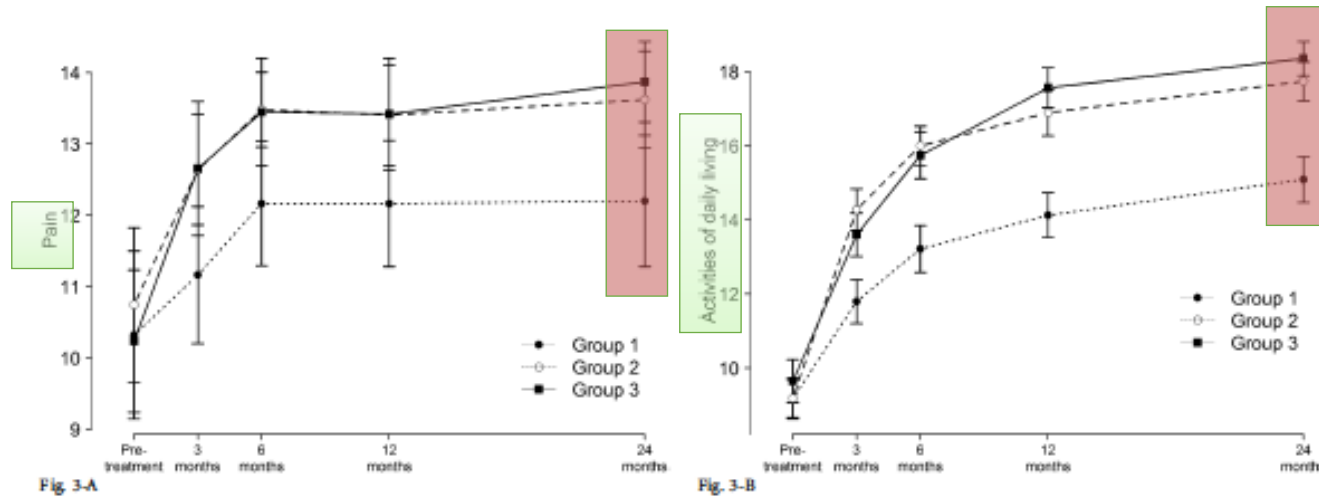


Fig. 3d

Graph showing Constant subscores in the three treatment groups for a) pain, b) activities of daily living, c) range of movement (ROM) and d) strength. Whiskers indicate standard deviation (Group 1, physiotherapy; Group 2, acromioplasty and physiotherapy; Group 3, rotator cuff repair, acromioplasty and physiotherapy).

Our results are in accordance with previous studies demonstrating successful conservative treatment of rotator cuff tears.^{15,21-23} We support a conservative regime as the primary treatment for non-traumatic rotator cuff tears in older patients. Further longer term studies are needed to define the optimal nature and true effect of physiotherapy, as well as the long-term outcome of all the interventions we have investigated.



Graph showing Constant scores subgroup points in the three treatment groups for pain (Fig. 3-A), activities of daily living (Fig. 3-B), range of motion (ROM) (Fig. 3-C), and strength (Fig. 3-D). Whiskers indicate the 95% CI.

Treatment of Nontraumatic Rotator Cuff Tears

A Randomized Controlled Trial with Two Years of Clinical and Imaging Follow-up

Juha Kukkonen, MD, PhD, Antti Joukainen, MD, PhD, Janne Lehtinen, MD, PhD, Kimmo T. Mattila, MD, PhD,
Esa K.J. Tuominen, MD, PhD, Tommi Kauko, MSc, and Ville Äärimaa, MD, PhD

Investigation performed at the Department of Orthopaedics and Traumatology, Turku University Hospital, Turku, Finland; the Department of Orthopaedics and Traumatology, Kuopio University Hospital, Kuopio, Finland; and the Department of Orthopaedics and Traumatology, Hatanpää Hospital, Tampere, Finland



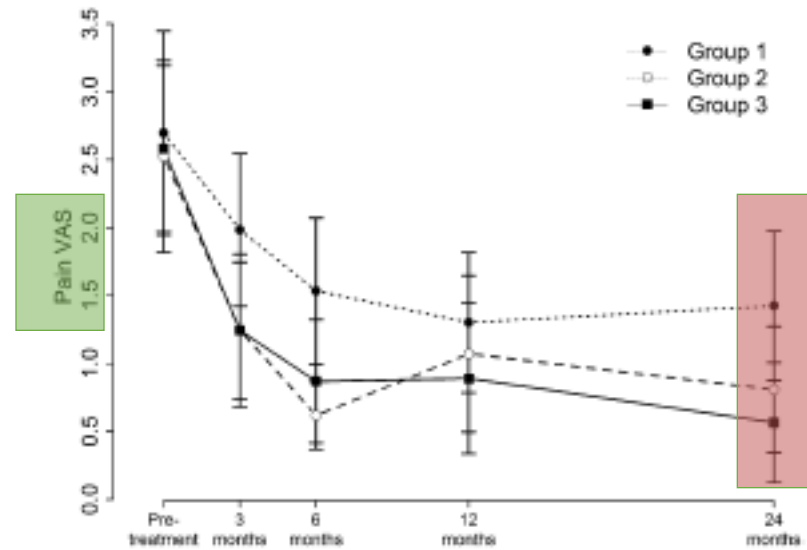


Fig. 4

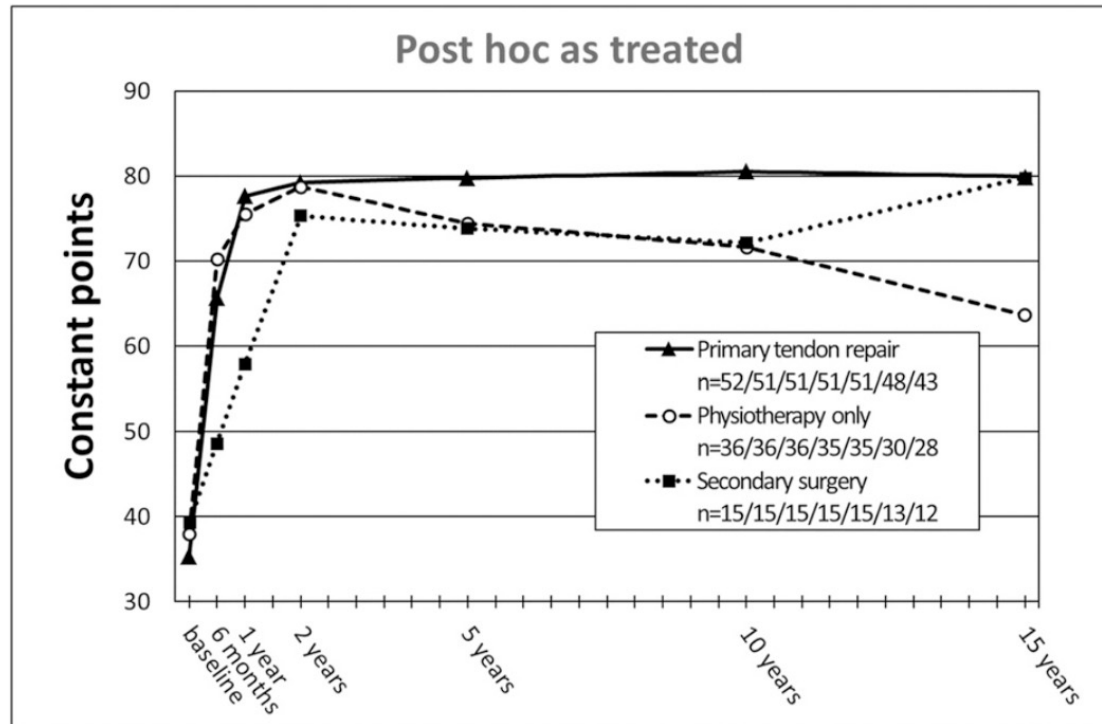
Graph showing VAS scores for pain in the three treatment groups. Whiskers indicate the 95% CI

Conclusions: There was no significant difference in clinical outcome between the three interventions at the two-year follow-up. The potential progression of the rotator cuff tear, especially in the non-repaired treatment groups, warrants further follow-up. On the basis of our findings, conservative treatment is a reasonable option for the primary initial treatment for isolated, symptomatic, nontraumatic, supraspinatus tears in older patients.

Fifteen-Year Results of a Comparative Analysis of Tendon Repair Versus Physiotherapy for Small-to-Medium-Sized Rotator Cuff Tears

A Concise Follow-up of Previous Reports*

S. Moosmayer, MD, PhD, G. Lund, PT, U. Sire Seljom, PT, B. Haldorsen, PT, I.C. Svege, PT, T. Hennig, OT, A.H. Pripp, PhD, and H.J. Smith, MD, PhD



Clinical decision-making regarding nonoperative or operative treatment for small-to-medium-sized rotator cuff tears is challenging. Better long-term results in the present study may support a primary operative approach. However, physiotherapy together with optional secondary repair also resulted in improvement compared with baseline, and most physiotherapy patients did not require surgery. Both treatment options should be discussed during counseling, but patients should be informed that while physiotherapy can be effective, long-term results from primary tendon repair are superior.

Our finding of a time-dependent decrease in the results from physiotherapy is supported by reports from studies of the natural course of unrepaired tears showing that they are at risk for anatomic and functional deterioration^{10,11,30-35}. According to the literature, tear widening is likely to occur in approximately 50% of unrepaired rotator cuff tears and may progress over many years, highlighting the need for long-term monitoring³⁶. In the present study, tears in the physiotherapy group that remained unrepaired for 15 years had progressively increased in size, and this was associated with a decrease in the Constant score. The observation that these patients had little interest in supplementary treatment measures at their last follow-up indicates that they may have developed effective coping strategies that enabled them to live well despite restrictions in shoulder function.

2013 Neer Award: predictors of failure of nonoperative treatment of chronic, symptomatic, full-thickness rotator cuff tears



Warren R. Dunn, MD, MPH^a, John E. Kuhn, MD, MS^{b,*}, Rosemary Sanders, BA^b, Qi An, MS^c, Keith M. Baumgarten, MD^d, Julie Y. Bishop, MD^e, Robert H. Brophy, MD^f, James L. Carey, MD, MPH^g, Frank Harrell, PhD^c, Brian G. Holloway, MD^h, Grant L. Jones, MD^e, C. Benjamin Ma, MDⁱ, Robert G. Marx, MD, MS^j, Eric C. McCarty, MD^k, Sourav K. Poddar, MD^k, Matthew V. Smith, MD^f, Edwin E. Spencer, MD^h, Armando F. Vidal, MD^k, Brian R. Wolf, MD, MS^l, Rick W. Wright, MD^m, for the MOON Shoulder Group

Conclusion: A patient's decision to undergo surgery is influenced more by low expectations regarding the effectiveness of physical therapy than by patient symptoms or anatomic features of the rotator cuff tear. As such, patient symptoms and anatomic features of the chronic rotator cuff tear may not be the best features to use when deciding on surgical intervention.



Prise en charge

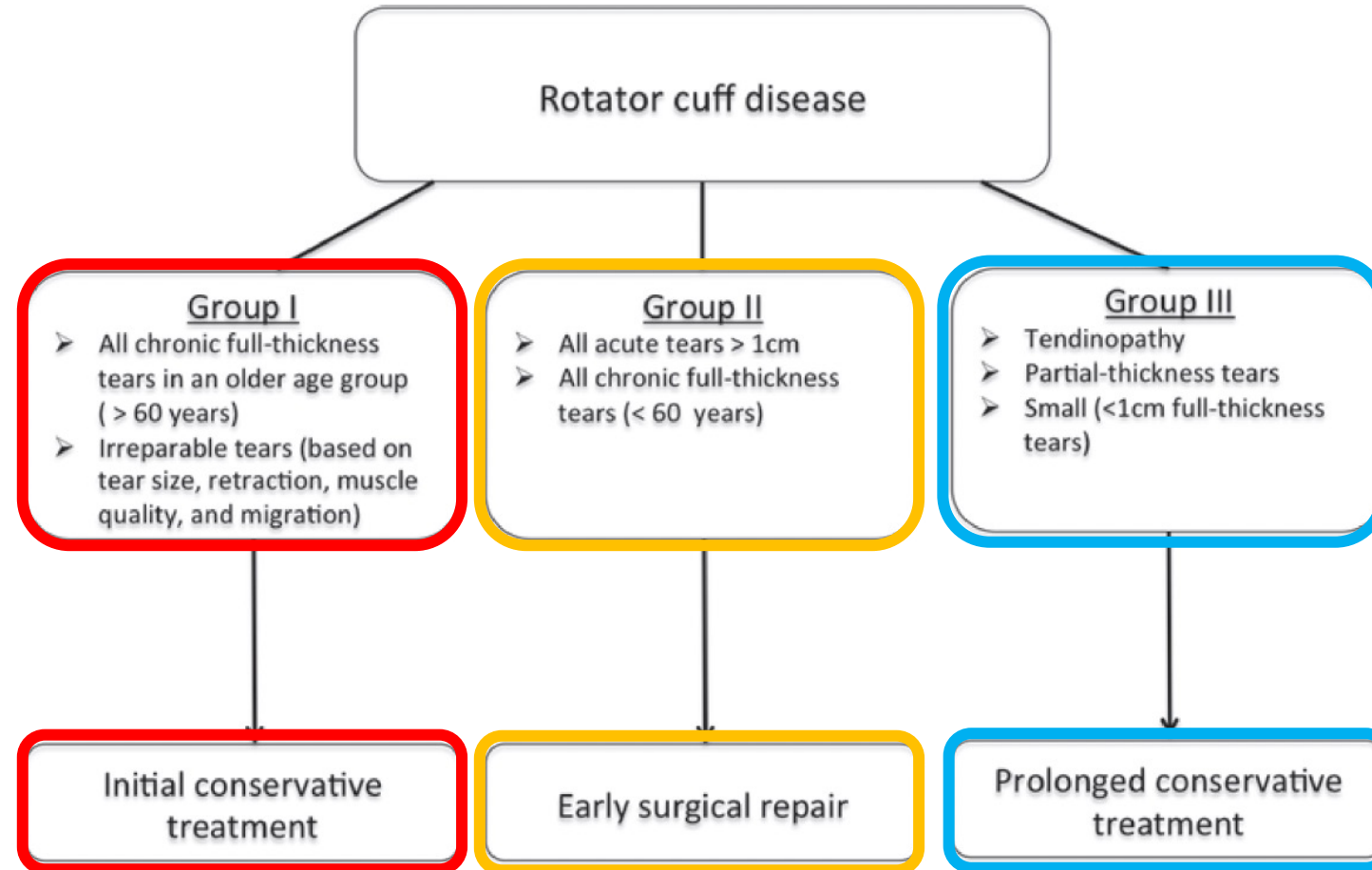


Prise en charge

CLINICAL COMMENTARY

EXERCISE REHABILITATION IN THE NON-OPERATIVE MANAGEMENT OF ROTATOR CUFF TEARS: A REVIEW OF THE LITERATURE

Peter Edwards, MSc¹
Jay Ebert, PhD¹
Brendan Joss, PhD¹
Gev Bhabra, FRCS¹
Tim Ackland, PhD¹
Allan Wang, PhD, FRACS^{1,2,3}



Possibilités

Solliciter la coiffe résiduelle?

Diminuer les contraintes sur la coiffe et entraîner la fonction?

Considérations

Focus sur la fonction plutôt que sur la structure

Chaîne ouverte

Focus sur la flexion (élévation antérieure)
Avec un bras de levier limité (décharge de la coiffe)

Chaîne fermée

Diminue les forces de « cisaillement » articulaires
Diminue la charge sur la coiffe
Stimule les propriocepteurs intra et extra articulaires.
Chaîne fermée en « faible charge » de poids du corps!

Progression

Important de vérifier la compliance (choix exercice, possibilité de le réaliser...)
Choisir un exercice dans chaque catégorie
3X/10-15 2-3 x/jour mais en fonction de la douleur et du ressenti
Ne doit pas prendre trop de temps, facile à réaliser et non douloureux

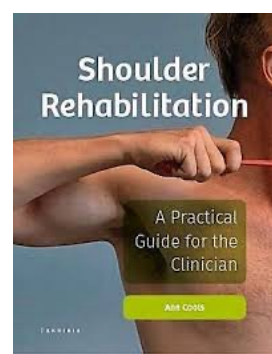




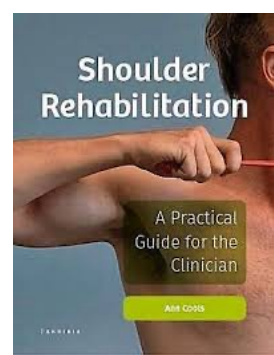
Exercices en vue de travailler l'élévation en chaîne fermée (9 étapes)

Programme de Levy - Exercices du deltoïde antérieure (6 étapes)

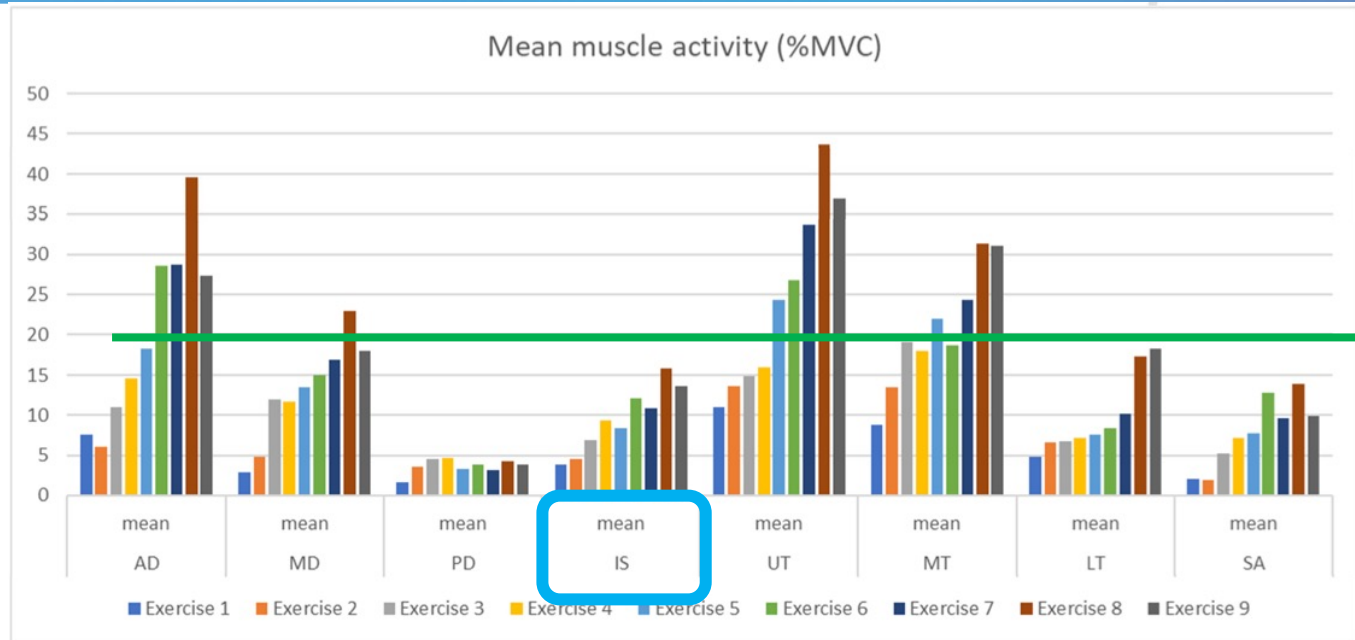
Programme Levy



Programme chaîne fermée

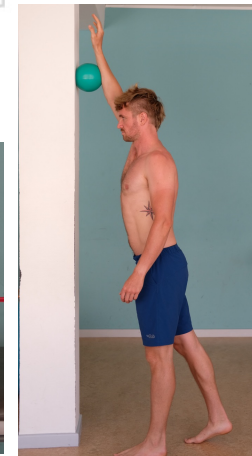


Programme chaîne fermée

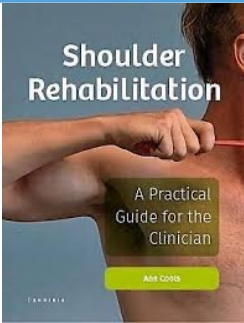


ELECTROMYOGRAPHIC ANALYSIS OF SELECTED SHOULDER MUSCLES DURING A SERIES OF EXERCISES, COMMONLY USED IN PATIENTS WITH SYMPTOMATIC DEGENERATIVE ROTATOR CUFF TEARS

Ann M. Cools, PT, PhD, Alexander Van Tongel, MD, PhD, Kelly Berckmans, PT, MsC, Valentien Spanhove, PT, MsC, Tibo Plaetevoet, PT, MsC, Jonas Rosseel, PT, MsC, Jasper Soen, PT, MsC, Ofer Levy, MD MCh(Orth) FRCS, Annelies Maenhout, PT, PhD



Programme chaîne fermée

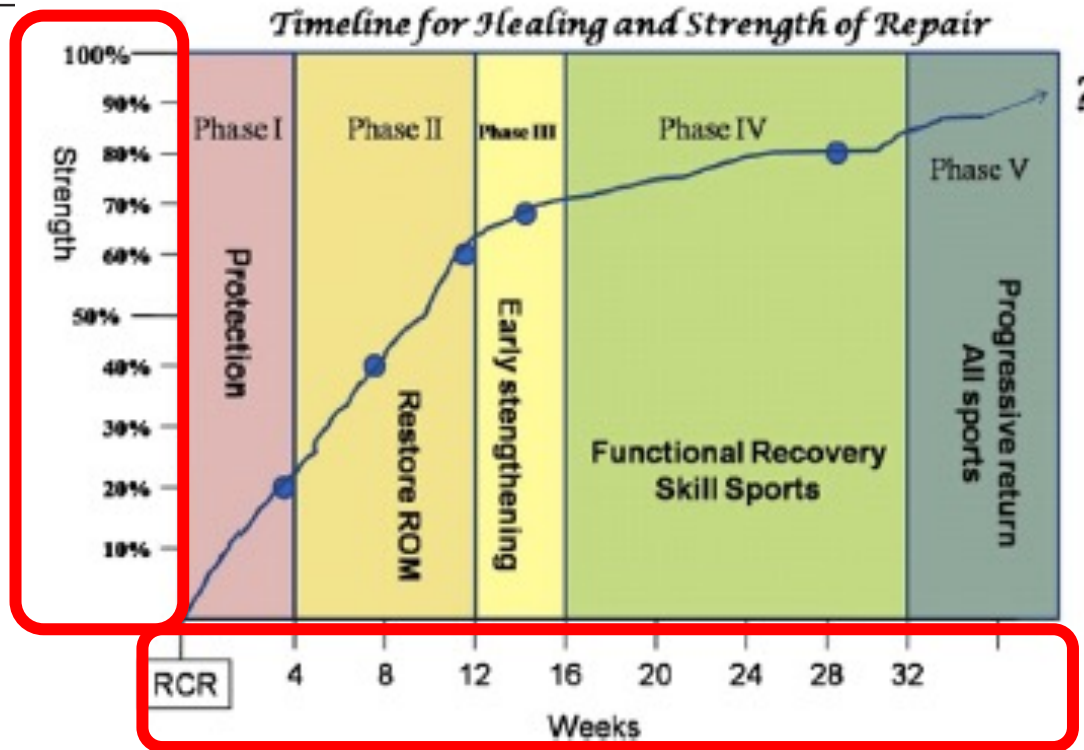


Quel est le timing de la rééducation après une chirurgie?



Postoperative Rotator Cuff Repair Rehabilitation and Complication Management

Frank McCormick, MD,^{*} Reginald B. Wilcox III, PT, DPT, MS, OCS,[†] and
Arnold Alqueza, MD[‡]



	PHASE I (4-6 WKS)	PHASE II (4-12 WKS)	PHASE III (12-16 WKS)	PHASE IV (16-32 WKS)	PHASE V (32+ WKS)
CPM	NO	NO	NO	NO	NO
PASSIVE ROM	NO	YES	YES	YES	YES
ACTIVE ROM	NO	YES	YES	YES	YES
WATER THERAPY	NO	YES	YES	YES	YES
RESISTANCE (STRENGTHENING)	NO	NO	YES	YES	YES
SPORTS PARTICIPATION-SKILL	NO	NO	NO	YES	YES
SPORTS PARTICIPATION-CONTACT	NO	NO	NO	NO	YES
CYRYOTHERAPY	YES	YES	YES	YES	YES
STRENGTH OF TENDON REPAIR	20%	40%	60%	70%	80%

ROTATOR CUFF TENDON HEALING

figure 2 A general overview of the physical therapy protocol based on a stepwise stage progression, including the accommodations to add. Limited license granted for use; property of www.bosshin.com.



De quels protocoles disposons-nous?

Early Versus Delayed Motion After Rotator Cuff Repair

A Systematic Review of Overlapping Meta-analyses

Darby A. Houck,^{*†} Matthew J. Kraeutler,[†] MD, Hayden B. Schuette,[†] BS, Eric C. McCarty,[†] MD, and Jonathan T. Bravman,[†] MD
Investigation performed at CU Sports Medicine and Performance Center, University of Colorado School of Medicine, Department of Orthopedics, Boulder, Colorado, USA

Longo et al. *BMC Musculoskeletal Disorders* (2021) 22:637
<https://doi.org/10.1186/s12891-021-04397-0>

BMC Musculoskeletal Disorders

RESEARCH ARTICLE

Open Access

Conservative versus accelerated rehabilitation after rotator cuff repair: a systematic review and meta-analysis

Umile Giuseppe Longo^{1*}, Laura Risi Ambrogioni¹, Alessandra Berton¹, Vincenzo Candela¹, Filippo Migliorini¹, Arianna Carnevale², Emiliano Schena², Ara Nazarian³, Joseph DeAngelis³ and Vincenzo Denaro¹



RESEARCH ARTICLE

Effectiveness of early versus delayed rehabilitation following rotator cuff repair: Systematic review and meta-analyses

Bruno Mazuquin^{1*}, Maria Moffatt¹, Peter Gill^{1,2}, James Selfe¹, Jonathan Rees³, Steve Drew⁴, Chris Littlewood¹

J Shoulder Elbow Surg (2014) ■, 1-9



JOURNAL OF
SHOULDER AND
ELBOW
SURGERY
www.elsevier.com/locate/jmse

Delayed versus early motion after arthroscopic rotator cuff repair: a meta-analysis

Kevin Chan, MD, MSc^a, Joy C. MacDermid, BScPT, MSc, PhD^b, Daniel J. Hoppe, MD, MEd^a, Olufemi R. Ayeni, MD, MSc, FRCSC^a, Mohit Bhandari, MD, FRCSC, PhD^a, Clary J. Foote, MD^a, George S. Athwal, MD, FRCSC^{b,*}



Author (year)	Early Rehabilitation	Delayed Rehabilitation
Arndt, Clavert (1)	IP: Sling for 6 weeks First day postoperative-week 6: Pendulum exercise + manual shoulder PROM exercises + CPM (3-5x per week) Week 6-4 Months: Shoulder AROM exercises From 4 months: Strengthening exercises	IP: Sling for 6 weeks Week 0-6: Immobilisation + Pendulum exercise Week 6-4 Months: Shoulder AROM exercises From 4 months: Strengthening exercises

Cuff and Pupello (2)	IP: Shoulder immobiliser for 6 weeks Weeks 0-3: Started in the second day post-surgery. Pendulum exercise + shoulder PROM exercises for flexion and external rotation + elbow, wrist and hand AROM exercises Weeks 4-6: Similar to week 0-3 + progressing ROM + AROM elbow, wrist and hand Weeks 6-10: Shoulder AAROM exercises Weeks 10-12: Shoulder AAROM + AROM exercises From week 12: Strengthening Face-to-face sessions 3x per week	IP: Shoulder immobiliser for 6 weeks Weeks 0-3: Pendulum exercise 3x daily for 5 minutes + elbow, wrist and hand AROM exercises Weeks 4-6: Pendulum exercise 3x daily for 5 minutes + elbow, wrist and hand AROM exercises Weeks 6-10: Shoulder PROM exercises + week 7 Shoulder AROM exercises 1x per week Weeks 10-12: Shoulder AAROM + AROM exercises From week 12: Strengthening
----------------------	--	--

Author (year)	Early Rehabilitation	Delayed Rehabilitation
Raschhofer, Poulios (17)	IP: Sling for 6 weeks Week 1: Elbow and shoulder girdle AROM exercises + shoulder PROM exercise elevation (45°) and abduction (45°) Weeks 2-6: Isometric strengthening Week 6-onwards: dynamic activation of the rotator cuff and strengthening of shoulder muscles 20 sessions in 12 weeks	IP: Sling for 6 weeks Week 1: Elbow and shoulder girdle AROM exercises + shoulder PROM exercise elevation (45°) and abduction (45°) Weeks 2-6: no information Week 6-onwards: dynamic activation of the rotator cuff and strengthening of shoulder muscles 20 sessions in 12 weeks

Sheps, Bouliane (18)	IP: Sling as needed Shoulder PROM, AAROM and AROM exercises for ADLs as early as pain allowed. After 6 weeks the rehabilitation programme was identical between groups. No further information was available for the rehabilitation programme from 6 weeks postoperative	IP: Sling for 6 weeks Shoulder PROM and AAROM were allowed No active movements of the shoulder. After 6 weeks the rehabilitation programme was identical between groups. No further information was available for the rehabilitation programme from 6 weeks postoperative
----------------------	---	---

Author (year)	Early Rehabilitation	Delayed Rehabilitation
Duzgun, Baltaci (4)	IP: NA Weeks 0-1: Cold pack every 2 hours for 20 min Weeks 1-2: Cold pack + deltoid and biceps soft-tissue mobilisation + shoulder PROM exercises for flexion and abduction + elbow and neck AROM + hand strengthening Weeks 2-3: Cold pack + shoulder PROM exercises for flexion + elbow and neck AROM exercises + glenohumeral mobilization Weeks 3-4: Cold pack + scapular mobilization + Shoulder AROM exercises for flexion, internal rotation, abduction + strengthening for biceps, triceps and serratus anterior using rubber bands Weeks 4-5: Cold pack + shoulder AROM exercises for flexion + strengthening of shoulder abduction, internal rotation, external rotation with rubber bands Weeks 5-6: Cold pack + progression of shoulder strengthening exercises with more resistant rubber bands + posterior capsule stretching Weeks 6: Week 5-6 + Resistive PNF exercises Weeks 7: Wall shoulder push-up + On-the-table press-up + on-the-table push-up	IP: NA Weeks 0-4: Early rehabilitation weeks 0-1 Weeks 4-6: Early rehabilitation weeks 2-3 Weeks 6-8: Early rehabilitation weeks 3-4 Weeks 8-10: Early rehabilitation weeks 4-5 Weeks 10-14: Early rehabilitation weeks 5-6 Weeks 14-18: Early rehabilitation weeks 6 Weeks 18-22: Early rehabilitation weeks 7

Author (year)	Early Rehabilitation	Delayed Rehabilitation
Sheps, Silveira (19)	IP: Sling only for comfort Weeks 0-6: Pendulum exercises + shoulder AAROM as pain allows + elbow and hand AROM exercises + pain-free AROM To begin general conditioning program of choice Weeks 6-10: Shoulder AROM exercises as pain allows – all planes + gentle stretching into terminal ROM + initiate closed chain exercises. Weeks 10-26: Isometric strengthening, progress to isotonic strengthening within pain-free ROM Closed chain strengthening Overhead strengthening once full ROM achieved and pain well controlled. Should not lift >15 lb. unless specified by physician Continue with stretching (therapist may now assist) Joint mobilization permitted	IP: Sling for 6 weeks Weeks 0-6: Pendulum exercises + shoulder AAROM were allowed + elbow and hand AROM exercises No active movements of the shoulder To begin general conditioning program of choice Weeks 6 -10: Shoulder AROM exercises as pain allows – all planes + gentle stretching into terminal ROM + initiate closed chain exercises. Weeks 10-26: Isometric strengthening, progress to isotonic strengthening within pain-free ROM Closed chain strengthening Overhead strengthening once full ROM achieved and pain well controlled. Should not lift >15 lbs. unless specified by physician Continue with stretching (therapist may now assist) Joint mobilization permitted

Author (year)	Early Rehabilitation	Delayed Rehabilitation
Mazzocca, Arciero (15)	IP: Ultrasling with abduction pillow for 6 weeks Day 2 or 3 to week 6: Shoulder AAROM exercises (external rotation & flexion) Week 7: Shoulder AAROM exercises + stretching Week 8-12: Shoulder AROM exercise + stretching Week 13: Shoulder isometric strengthening Week 14: Shoulder strengthening using theraband for external and internal rotation Week 15: Strengthening using theraband for external and internal rotation, and abduction From week 16: Strengthening using theraband for external and internal rotation, and abduction + PNF Face-to-face session 2x week	IP: Ultrasling with abduction pillow for 6 weeks Week 5: Shoulder AAROM exercises (external rotation & flexion) Week 7: Shoulder AAROM exercises + stretching Week 8-12: Shoulder AROM exercise + stretching Week 13: Isometric strengthening Week 14: Strengthening using theraband for external and internal rotation Week 15: Strengthening using theraband for external and internal rotation, and abduction From week 16: Strengthening using theraband for external and internal rotation, and abduction + PNF Face-to-face session 2x week

Oyarzún, Poblete (16)	IP: Sling + abduction component for 1 week Weeks 2-4: Shoulder PROM exercises for flexion & external rotation + shoulder AROM exercise for adduction and trunk rotations + isometric strengthening for shoulder internal rotation and hand gripping + strengthening exercises for elbow flexion Face-to-face sessions 4x week for 4 weeks	IP: Sling + abduction component for 4 weeks Weeks 2-4: Pendulum exercise 2x day for 4x week
-----------------------	---	--

Author (year)	Early Rehabilitation	Delayed Rehabilitation
Duzgun, Baltaci (5)	IP: 2 weeks Weeks 2-7: Soft tissue mobilization for the scapulothoracic and glenohumeral joints along with mobilisation exercises (3x week during all weeks). Weeks 3: Shoulder AROM exercises for scaption, flexion and abduction Weeks 4: Light resistive exercises with rubber bands.	IP: 4 weeks Weeks 4-17: Soft tissue mobilization for the scapulothoracic and glenohumeral joints along with mobilisation exercises (3x week during all weeks). Weeks 6: Shoulder AROM exercises for scaption, flexion and abduction. Weeks 8: Light resistive exercises with rubber bands.
Fawzy, Rizk Mohamed (6)	IP: Sling for 6 weeks Day 2: Shoulder PROM exercises for flexion and external rotation + pendulum exercise + elbow, wrist and hand AROM exercises Week 6: Shoulder AROM exercises Weeks 12: Shoulder AROM exercises and strengthening exercises From 6 months: Sports activities Face-to-face sessions 3x week	IP: Sling for 6 weeks Week 6: Shoulder PROM exercises for flexion and external rotation + pendulum + elbow, wrist and hand AROM exercises Week 9: Shoulder AROM exercises Weeks 12: Shoulder AROM exercises + shoulder strengthening exercises From 6 months: Sports activities Face-to-face sessions 3x week

RESEARCH ARTICLE

Effectiveness of early versus delayed rehabilitation following rotator cuff repair: Systematic review and meta-analyses

Bruno Mazuquin^{1*}, Maria Moffatt¹, Peter Gill^{1,2}, James Selfe¹, Jonathan Rees³, Steve Drew⁴, Chris Littlewood¹



Effectiveness of early compared with conservative rehabilitation for patients having rotator cuff repair surgery: an overview of systematic reviews

Bruno Fles Mazuquin,¹ Andrew Charles Wright,² Sarah Russell,³ Puneet Monga,³ James Selfe,⁴ Jim Richards¹

Aim/objective The aim is to critically analyse and discuss the current literature and determine the effectiveness of rehabilitation for patients after surgical repair of rotator cuff tears for range of motion (ROM), pain, functional status and retear rates; in addition, an update of new literature is included.

Summary/Conclusions Early mobilisation may be beneficial, particularly for small and medium tears; however, more studies with higher quality are required, especially for patients with large tears who have been given less attention.



Physiotherapy 102 (2016) 20–28

Physiotherapy

Systematic review

Rehabilitation following surgical repair of the rotator cuff:
a systematic review



Sophie Thomson^{a,b,*}, Chris Jukes^b, Jeremy Lewis^{a,b,c}

Passive ROM exercise can be started 1 day postsurgery,
and active ROM may follow several days later if the patient
has a small-moderate sized RC tear and a strong fixation
method [10].

If the patient has a large RC tear, the optimal immobilisation period in a sling may be 4 to 6 weeks in order to aid tendon healing and prevent stiffness post RC repair

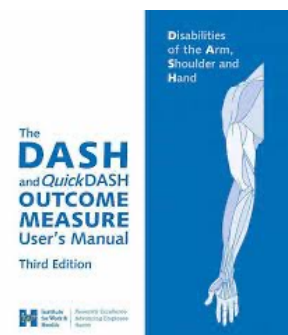




6 semaines
3 mois
6 mois
1 an
2 ans



Flexion
ABD
ER /IR 90°



WORC
SANE
CONSTANT
ASES
SST



Re-rupture, capsulite
rétractile, raideur
résiduelle





Quelle prise en charge en kinésithérapie ?

[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD¹ • CHRIS LITTLEWOOD, PhD²
TIM ACKLAND, PhD¹ • ALLAN WANG, FRACS, PhD^{3,4}

A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair

J Shoulder Elbow Surg (2016) 25, 521–535



ELSEVIER

CONSENSUS STATEMENT

The American Society of Shoulder and Elbow Therapists' consensus statement on rehabilitation following arthroscopic rotator cuff repair



Charles A. Thigpen, PT, PhD, ATC^{a,b,*}, Michael A. Shaffer, MSPT, OCS, ATC^c,
Bryce W. Gaunt, PT, SCS^d, Brian G. Leggin, PT, MS, OCS^e, Gerald R. Williams, MD^f,
Reg B. Wilcox III, PT, DPT, MS, OCS^g

JOURNAL OF
SHOULDER AND
ELBOW
SURGERY
www.elsevier.com/locate/ymse



[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD¹ • CHRIS LITTLEWOOD, PhD²
TIM ACKLAND, PhD¹ • ALLAN WANG, FRACS, PhD^{1A}

A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair

TABLE 4

SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

	Time Point	Exercises
Phase 1: protection and early motion phase EMG activation: $\leq 15\%$ MVIC	Early: weeks 2-6 Delayed: weeks 5-8	Passive ROM: flexion Forward bow, supine therapist-assisted flexion, supine self-assisted flexion, sidelying flexion, towel slides, washcloth press-up Passive ROM: rotation (no IR; ER to 30°) Wall-assisted ER, supine bar-assisted ER, upright bar-assisted ER
Phase 2: active-assisted to active motion phase EMG activation: $\leq 20\%$ MVIC	Early: weeks 7-9 Delayed: weeks 9-12	Active-assistive ROM: flexion Ball roll, upright bar-assisted flexion, supported wall walk/slide (progression into unsupported), pulley-assisted flexion Active ROM: flexion Supine active press-up, reclined active press-up Active-assistive ROM: rotation Continue ER exercises as above. Commence self-assisted IR, bar-assisted IR
Phase 3: strengthening phase EMG activation: 21%-50% MVIC	Early: week 10 Delayed: week 13	Active ROM: flexion Progress to standing press-up/active flexion (short lever, progressing to long lever), resisted active flexion Active ROM—strengthening: rotation Progress from seated to standing (in slight abduction to 45° of abduction) to sidelying (with and/or without pillow) Seated row exercises, progressing to standing row/pulls: forward/scapular punches
Phase 4: late strengthening phase EMG activation: $\geq 50\%$ MVIC	Early: week 20 Delayed: week 20	Active flexion/abduction Prone horizontal abduction at 90° and 100° Strengthening: rotation Standing ER (in 90° of abduction) to prone (ER) in 90° of abduction Push-up/push-up plus, dynamic hugs

Abbreviations: EMG, electromyography; ER, external rotation; IR, internal rotation; MVIC, maximal voluntary isometric contraction; ROM, range of motion.



[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD¹ • CHRIS LITTLEWOOD, PhD²
TIM ACKLAND, PhD¹ • ALLAN WANG, FRACS, PhD^{1*}

A Systematic Review of Electromyography Studies in Normal Shoulders to Inform Postoperative Rehabilitation Following Rotator Cuff Repair

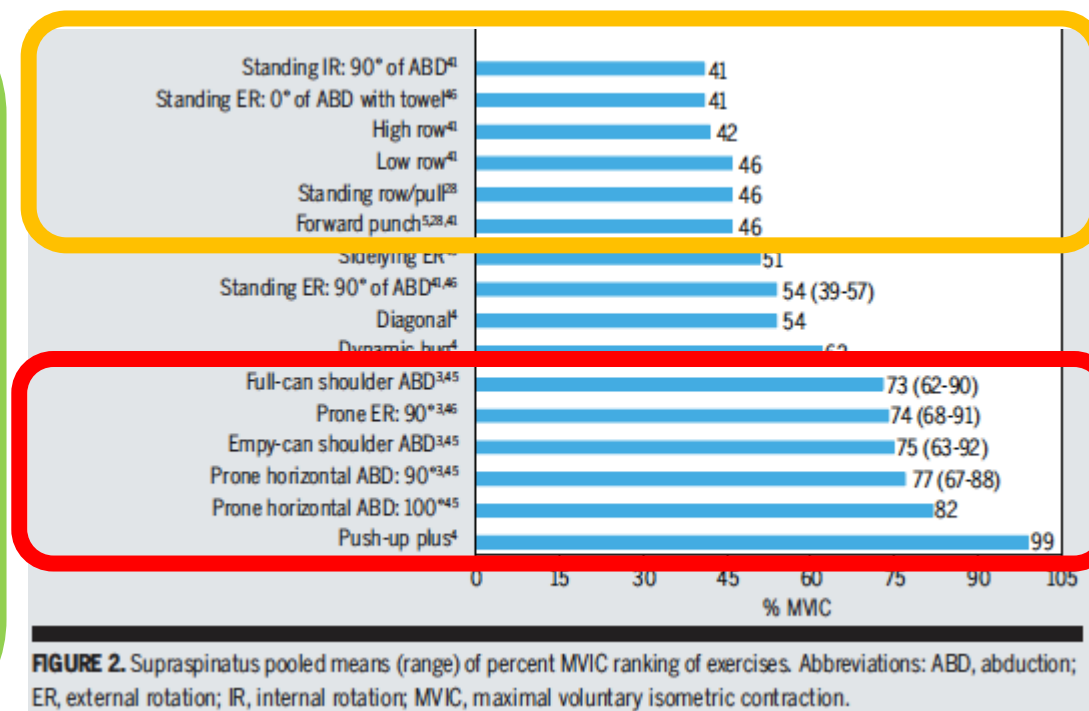
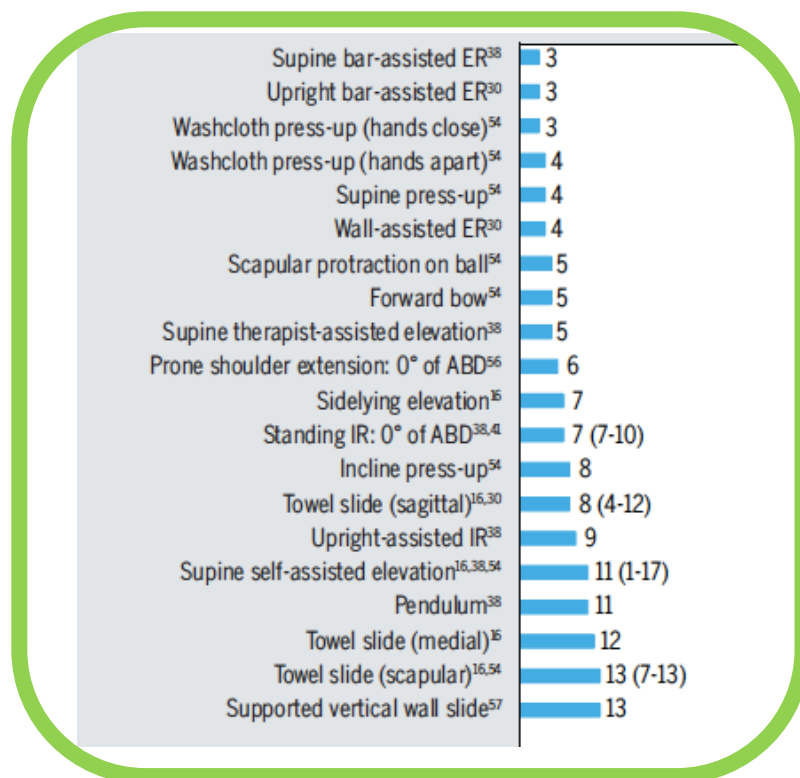


FIGURE 2. Supraspinatus pooled means (range) of percent MVIC ranking of exercises. Abbreviations: ABD, abduction; ER, external rotation; IR, internal rotation; MVIC, maximal voluntary isometric contraction.

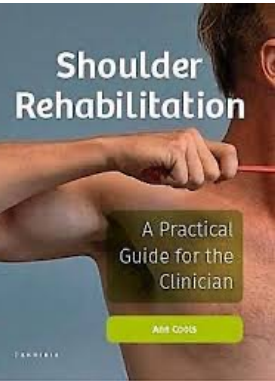


TABLE 4 SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

	Time Point				
Phase 1: protection and early motion phase EMG activation: $\leq 15\%$ MVIC	Early: weeks 2-6 Delayed: weeks 5-8	Phase 2: active-assisted to active motion phase EMG activation: $\leq 20\%$ MVIC	Early: weeks 7-9 Delayed: weeks 9-12	Phase 3: strengthening phase EMG activation: 21%-50% MVIC	Early: week 10 Delayed: week 13
				Phase 4: late strengthening phase EMG activation: $\geq 50\%$ MVIC	Early: week 20 Delayed: week 20



Shoulder Rehabilitation

A Practical Guide for the Clinician

Alan Coats

TANDORI

TABLE 4

SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

	Time Point				
Phase 1: protection and early motion phase EMG activation: $\leq 15\%$ MVIC	Early: weeks 2-6 Delayed: weeks 5-8	Phase 2: active-assisted to active motion phase EMG activation: $\leq 20\%$ MVIC	Early: weeks 7-9 Delayed: weeks 9-12	Phase 3: strengthening phase EMG activation: 21%-50% MVIC	Early: week 10 Delayed: week 13
				Phase 4: late strengthening phase EMG activation: $\geq 50\%$ MVIC	Early: week 20 Delayed: week 20



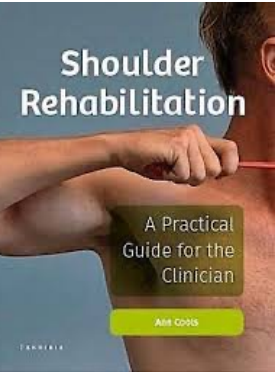


TABLE 4 SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

Time Point	
Phase 1: protection and early motion phase	Early: weeks 2-6 Delayed: weeks 5-8
EMG activation: $\leq 15\%$ MVIC	

Phase 2: active-assisted to active motion phase	Early: weeks 7-9 Delayed: weeks 9-12
EMG activation: $\leq 20\%$ MVIC	

Phase 3: strengthening phase	Early: week 10 Delayed: week 13
EMG activation: 21%-50% MVIC	

Phase 4: late strengthening phase	Early: week 20 Delayed: week 20
EMG activation: $\geq 50\%$ MVIC	



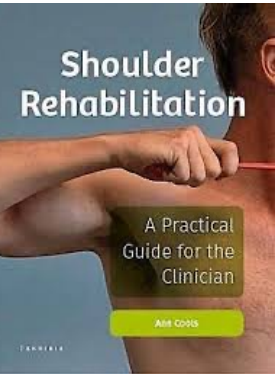


TABLE 4 SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

	Time Point
Phase 1: protection and early motion phase	Early: weeks 2-6 Delayed: weeks 5-8
EMG activation: $\leq 15\%$ MVIC	

Phase 2: active-assisted to active motion phase	Early: weeks 7-9 Delayed: weeks 9-12
EMG activation: $\leq 20\%$ MVIC	

Phase 3: strengthening phase	Early: week 10 Delayed: week 13
EMG activation: 21%-50% MVIC	

Phase 4: late strengthening phase	Early: week 20 Delayed: week 20
EMG activation: $\geq 50\%$ MVIC	



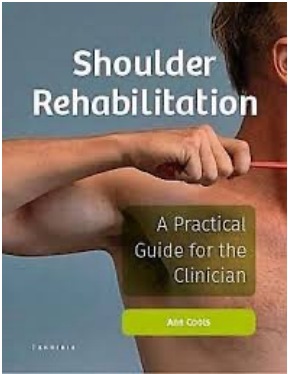


TABLE 4 SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

20 à 50%MVC

Time Point	
Phase 1: protection and early motion phase	Early: weeks 2-6 Delayed: weeks 5-8
EMG activation: ≤15% MVIC	

Phase 2: active-assisted to active motion phase	Early: weeks 7-9 Delayed: weeks 9-12
EMG activation: ≤20% MVIC	

Phase 3: strengthening phase	Early: week 10 Delayed: week 13
EMG activation: 21%-50% MVIC	

Phase 4: late strengthening phase	Early: week 20 Delayed: week 20
EMG activation: ≥50% MVIC	



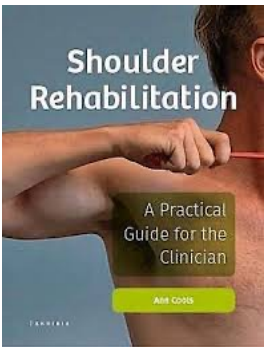


TABLE 4 SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

Time Point
Phase 1: protection and early motion phase
Early: weeks 2-6
Delayed: weeks 5-8
EMG activation: $\leq 15\%$ MVIC

Phase 2: active-assisted to active motion phase	Early: weeks 7-9
EMG activation: $\leq 20\%$ MVIC	Delayed: weeks 9-12

Phase 3: strengthening phase	Early: week 10
EMG activation: 21%-50% MVIC	Delayed: week 13

Phase 4: late strengthening phase	Early: week 20
EMG activation: $\geq 50\%$ MVIC	Delayed: week 20



Shoulder Rehabilitation

A Practical Guide for the Clinician

And Coils

TABLE 4

SUMMARY AND SUGGESTED CONTINUUM OF REHABILITATION EXERCISES, BASED ON MUSCLE ACTIVATION (PERCENT MVIC) FOR THE SUPRASPINATUS AND INFRASPINATUS, FOR BOTH EARLY AND DELAYED POSTOPERATIVE MOTION PATHWAYS

75 à 95-100%MVC

	Time Point
Phase 1: protection and early motion phase	Early: weeks 2-6 Delayed: weeks 5-8
EMG activation: $\leq 15\%$ MVIC	

Phase 2: active-assisted to active motion phase	Early: weeks 7-9 Delayed: weeks 9-12
EMG activation: $\leq 20\%$ MVIC	

Phase 3: strengthening phase	Early: week 10 Delayed: week 13
EMG activation: 21%-50% MVIC	

Phase 4: late strengthening phase	Early: week 20 Delayed: week 20
EMG activation: $\geq 50\%$ MVIC	



Quels facteurs influencent la
récupération?



Psychosocial Factors, Sleep, and Central Pain Processing for Making a Prognosis About Recovery of Pain, Function, and Quality of Life After Rotator Cuff Repair: An Exploratory Longitudinal Study

AUTHORS ^

Ariane Schwank, PT, MSc^{1,2,3}, Filip Struyf, PT, Prof¹, Thomas Struyf, PhD⁴, Michel Mertens, PT, PhD^{1,3}, David Gisi, PT², Emanuel Benninger, PD, MD⁵, Mira Meeus, PT, Prof^{1,3}

AFFILIATIONS v

Journal of Orthopaedic & Sports Physical Therapy

ANOUK J.M. FERMONT, MSc^{1,2} • NIENKE WOLTERBEEK, PhD¹ • RONALD N. WESSEL, MD¹
JEAN-PIERRE BAEYENS, PhD^{3,4} • ROB A. DE BIE, PhD⁵

Prognostic Factors for Successful Recovery After Arthroscopic Rotator Cuff Repair: A Systematic Literature Review

- Facteurs démographiques (âge, homme)
- Facteurs cliniques (diabète, obésité, tabagisme, maladies cardio-vasculaires, statines, niveau faible d'activité physique, ROM pré-op)
- Facteurs en lien avec la coiffe (taille de la rupture, infiltration graisseuse, rétraction)
- Facteurs en lien avec la technique chirurgicale (procédure au niveau d'AC & biceps)
- Facteurs psychologiques (dépression, faible croyance dans la guérison, kinésiophobie)
- Facteurs sociaux (AT, MP, niveaux d'éducation, satisfaction au travail)



Quels sont les délais de récupération?





4 à 12 semaines



Jusqu'à 12 mois



3 mois
(jusqu'à 12 mois)

The
DASH
and *QuickDASH*
**OUTCOME
MEASURE**
User's Manual
Third Edition



Jusqu'à 24 mois

Speed of recovery after arthroscopic rotator cuff repair

Jennifer Kurowicki, MD, Derek D. Berglund, MD, Enesi Momoh, MD, Shanell Disla, BS, Brandon Horn, DO, M. Russell Giveans, PhD, Jonathan C. Levy, MD*

Conclusion

Recovery after arthroscopic rotator cuff repair continues to improve during a 12-month period regardless of tear size. At 3 months, approximately 75% of pain relief and 50% of functional recovery can be expected. Larger tears take longer to maximize range of motion and subjective assessment of a return to normal (SANE) and have worse functional results. Preoperative and postoperative pain scores are not influenced by tear size. High satisfaction rates are seen after repair at all time points.



Quel sport après?





Return to physical activities after arthroscopic rotator cuff repair: a systematic review and meta-analysis

Erica Kholinne^{1,2} · Leonard Christianto Singjie¹ · Aldo Fransiskus Marsetio³ · Jae-Man Kwak⁴ · In-Ho Jeon⁵

1065 patients (644 hommes/421 femmes)



Retour activités quotidiennes
97.3%
9 mois



Retour au travail
83.8%
6.29 mois



Retour au sport
88.2%
10.34 mois

Return to Sport After Arthroscopic Rotator Cuff Repair



Is There a Difference Between the Recreational and the Competitive Athlete?

Burak Altintas,^{*†} MD, Nicole Anderson,^{*} BA, Grant J. Dornan,^{*} MSc, Robert E. Boykin,[‡] MD, Catherine Logan,^{**†} MD, MBA, MSPT, and Peter J. Millett,^{*†§} MD, MSc
Investigation performed at the Steadman Philippon Research Institute, Vail, Colorado, USA

486 patients (330 hommes/156 femmes)
Age moyen 41.6 ans (13.2-84 ans)

347 athlètes (Baseball > golf > football > tennis)

81 pro/compétition

266 amateurs

Retour aux sports 85.5% (total)
70.2% même niveau

Pro/compétition 61.5% même niveau

73.3% chez amateurs

38% sports de lancer/overhead



% of athletes

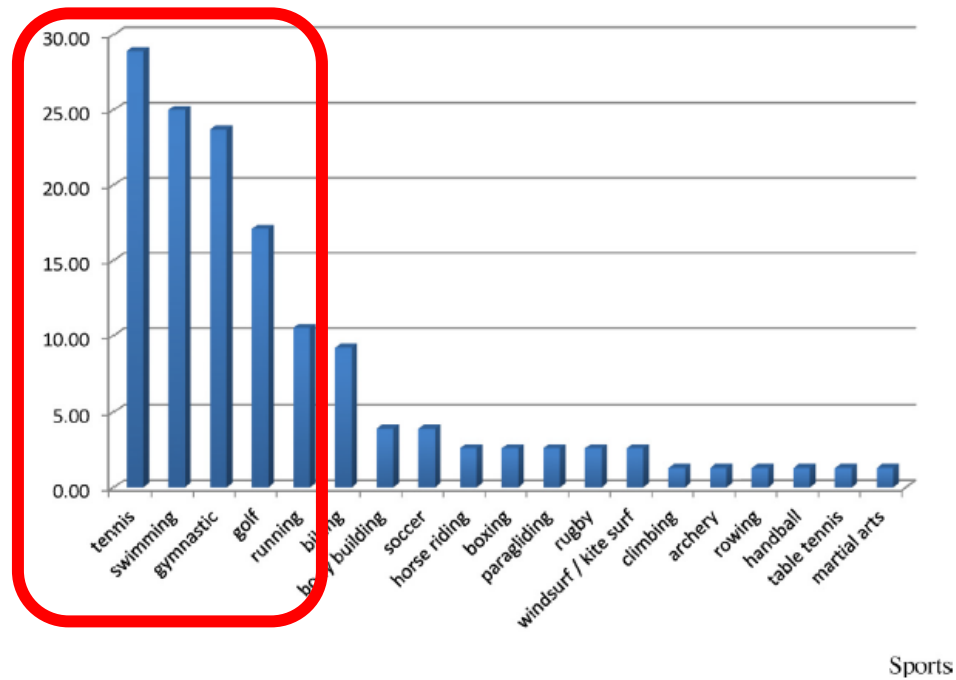


Fig. 1. Sports activities before surgery (several sports possible per patient).



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



Original article

Return to recreational sport and clinical outcomes with at least 2 years follow-up after arthroscopic repair of rotator cuff tears

M. Antoni^{a,*}, S. Klouche^a, V. Mas^a, M. Ferrand^a, T. Bauer^a, P. Hardy^{a,b}

^a Hôpitaux Universitaires Paris Île-de-France Ouest, AP-HP, Boulogne-Billancourt, France

^b Université de Versailles Saint-Quentin-en-Yvelines, UFR des Sciences de la Santé, Versailles, France





57 $\pm$ 7.3 ans

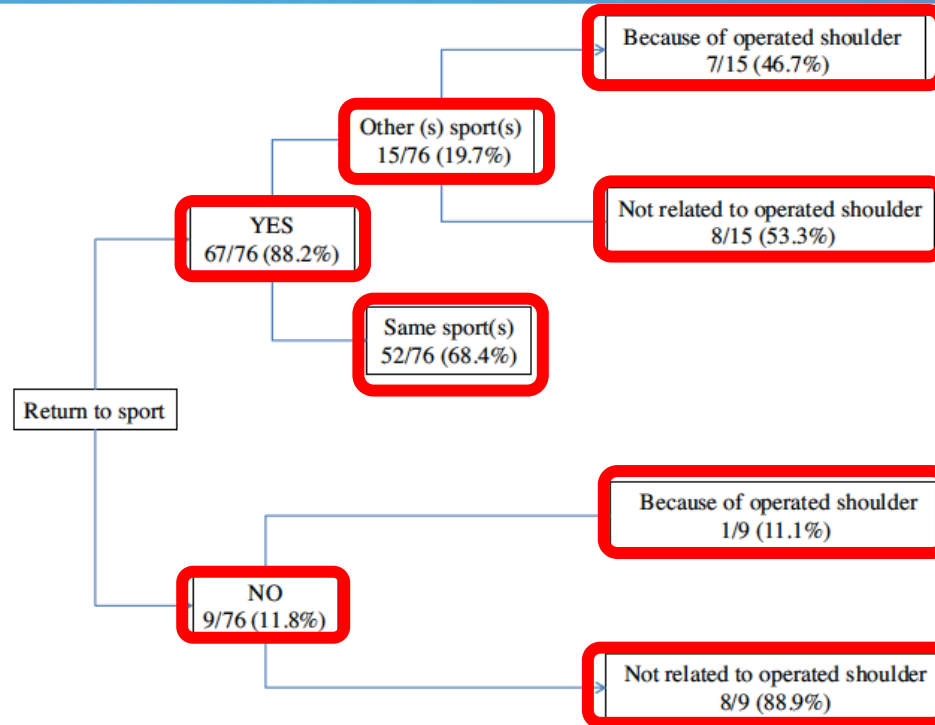


Fig. 2. Return to sports.

5. Conclusion

Most of the recreational sports patients were able to resume sports after arthroscopic repair of the rotator cuff, most often at the same level and with the same frequency as before surgery. The factors significantly associated with not returning to sports were pain symptoms evolving for longer than 9 months and an intensity of preoperative sports less than 2 h/week.

Rééducation après une prothèse d'épaule



A Systematic Review of Proposed Rehabilitation Guidelines Following Anatomic and Reverse Shoulder Arthroplasty

Prothèse anatomique

- Arthrose avec coiffe intacte
- Polyarthrite rhumatoïde
- Ostéonécrose avasculaire
- Fractures chez sujets jeunes
- Révisions avec coiffe fonctionnelle

Prothèse inversée

- Arthropathie de la coiffe
- Fractures complexes
- Rupture massive coiffe
- Révisions avec coiffe déficiente
- Tumeurs, paralysie

GARRETT S. BULLOCK, PT, DPT¹ • GRANT E. GARRIGUES, MD²
LEILA LEDBETTER, MLIS³ • JUNE KENNEDY, PT, MS⁴

A Systematic Review of Proposed Rehabilitation Guidelines Following Anatomic and Reverse Shoulder Arthroplasty

FINDINGS: Most published rehabilitation guidelines post total shoulder arthroplasty and reverse total shoulder arthroplasty are clinical commentaries, with little consensus on timelines for initiation and progression of exercises.



Prothèse totale anatomique

TABLE 3

REHABILITATION GUIDELINES FOLLOWING ANATOMIC
TOTAL SHOULDER ARTHROPLASTY

Study	Sling	PROM	AAROM	AROM	Resisted Exercise	Precaution
Boardman et al ⁴	0-6 wk	0-3 wk: shoulder stretching at home	3-5 wk: pulley exercises 5-10 wk: ER and IR at 0° and 90° of abduction	0-4 wk: elbow, wrist, and hand 10+ wk: gradual return to shoulder function	5-10 wk: shoulder isometrics 10+ wk: exercises with elastic bands	None
Brander et al ⁸	0-4 wk	0-3 wk: 90° of flexion and abduction, 45° of IR, 15° of ER 4-12 wk: greater than 90° of flexion and abduction	3-4 wk: wall walking 6-12 wk: greater than 90°	0-6 wk: ADL with nonsurgical side 6-12 wk: past 90°, 2-handed ADL 12+ wk: AROM without resistance in all planes and full-ROM body-weight exercise in all planes	0-3 wk: deltoid isometrics 3-6 wk: deltoid vigorous isometrics 6-12 wk: progress to isotonic as tolerated 12+ wk: progressive resistance	None
Brown and Friedman ⁹	0-4 wk	0-4 wk: ER, IR, flexion 4-6 wk: continue with ER, IR, flexion	4-6 wk: horizontal adduction, ER at 90° of abduction	4-6 wk: flexion in supine 6-10 wk: flexion and abduction in sitting	4-6 wk: shoulder isometrics, scapular and distal arm musculature 6-10 wk: ER and IR 10 wk to 6 mo: add weights to active ROM exercise, wall push-ups, functional specificity	None
Cahill et al ¹¹	0-6 wk	0-4 wk: 120° of flexion, 30° of ER 4-6 wk: horizontal adduction, 90° of ER	0-4 wk: pendulums 4-10 wk: ER and pulleys	0-4 wk: elbow, wrist, and hand 4-10 wk: shoulder, all planes	4-10 wk: deltoid isometrics, closed-chain exercises, scapular retraction 10-16 wk: isometrics, scapular strengthening, resistance exercises 16-22 wk: functional strength through full ROM, gym program	4-10 wk: 150° of flexion, 45° of ER
Cameron et al ¹²	0-4 wk	0-6 wk: 120° of flexion, 30° of ER 6-10 wk: full ROM	0-6 wk: pendulums 6-10 wk: pendulums	0-6 wk: elbow, wrist, and hand 6-10 wk: shoulder flexion and abduction 11+ wk: full activities as tolerated	6-10 wk: ER and IR exercises with elastic bands 11+ wk: free-weight	0-6 wk: protect subscapularis

TABLE 3

REHABILITATION GUIDELINES FOLLOWING ANATOMIC
TOTAL SHOULDER ARTHROPLASTY (CONTINUED)

Study	Sling	PROM	AAROM	AROM	Resisted Exercise	Precaution
Denard and Lädermann ²⁰ (immediate)	0-4 wk	Flexion as tolerated, 30° of ER 4-8 wk: ER as tolerated	0-4 wk: pulleys 4-8 wk: flexion	0-4 wk: elbow, wrist, and hand 4-8 wk: flexion 8-12 wk: full ROM as tolerated	8-12 wk: strength as tolerated 12+ wk: activity as tolerated	12+ wk: 11.3 kg
Denard and Lädermann ²⁰ (delayed)	0-4 wk	0-4 wk: none 4-8 wk: flexion and ER	8-12 wk: begin AAROM	0-4 wk: elbow, wrist, and hand 8-12 wk: ROM as tolerated	8-16 wk: strength as tolerated 16+ wk: activity as tolerated	16+ wk: 11.3 kg
Etter et al ²³	0-6 wk	0-6 wk: 130° of flexion, 25° of ER 6-12 wk: movement as tolerated in all planes	0-6 wk: pendulum 6-12 wk: movement as tolerated in all planes	0-6 wk: elbow, wrist, and hand 6-12 wk: flexion 12+ wk: full ROM as tolerated	0-6 wk: deltoid isometrics 6-12 wk: closed-kinetic-chain exercises, light resistance exercises 12+ wk: isometrics and resistive exercises	None
Fusaro et al ²⁷	0-6 wk	0-6 wk: PROM device 6 wk to 3 mo: full ROM	0-6 wk: pendulums and pulleys 6 wk to 3 mo: full ROM	0-6 wk: elbow, wrist, and hand 6 wk to 3 mo: nonpainful ROM	0-6 wk: aquatic PT 6 wk to 3 mo: proprioception isometrics 3+ mo: return to driving and work 6+ mo: moderate sports	None
Mulieri et al ¹⁴ (PT group)	0-6 wk	0-3 wk: 20° of ER, 120° of scapular abduction, sling use except during therapy 4-6 wk: ER to 35°, sling use except during therapy 6-12 wk: 55° of ER	4-6 wk: scapular abduction to 135° with wand	0-3 wk: elbow, wrist, and hand 4-6 wk: elbow, wrist, and hand 7-9 wk: flexion, ER, extension, diagonals	4-6 wk: closed-kinetic-chain exercises; isometrics for IR, ER, extension, abduction, and depression 7-9 wk: isometrics at various angles, biceps and triceps isometrics, closed-kinetic-chain exercise 9-12 wk: elastic band and isometrics	None
Mulieri et al ¹⁴	0-8 wk	0-8 wk: pendulum discontinue sling use 55° of ER	None	0-8 wk: elbow, wrist, and hand	14+ wk: elastic-band exercises and isometrics	14+ wk: 55° of ER

ER, external rotation; IR, internal rotation; PT, physical therapy; ROM, range of motion.



Prothèse totale anatomique

GARRETT S. BULLOCK, PT, DPT¹ • GRANT E. GARRIGUES, MD²
LEILA LEDBETTER, MLIS³ • JUNE KENNEDY, PT, MS⁴

A Systematic Review of Proposed Rehabilitation Guidelines Following Anatomic and Reverse Shoulder Arthroplasty

Attelle

0 à 4 semaines

0 à 4 semaines

Mobilisation
passive

0 à 4 semaines
Flexion sous douleur
30° RE
4 à 8 semaines
ER sous douleur

0 à 4 semaines
NON
4 à 8 semaines
Flexion et ER sous douleur

Mobilisation
active
aidée/active

0 à 4 semaines
Poignet, main, coude
poulie
4 à 8 semaines
Flexion
8-12 semaines
amplitudes complètes

0 à 4 semaines
Poignet, main, coude
8-12 semaines
AAROM et AROM

renforcement

8-12 semaines
Sous le seuil de la douleur
12 semaines +
Activités complètes

8-16 semaines
Sous le seuil de la douleur
16 semaines +
Activités complètes

Considérations

Précautions concernant le subscapulaire
(instabilité, douleur, faiblesse des RI, moins
bons résultats fonctionnels)



Prothèse totale inversée

TABLE 4

REHABILITATION GUIDELINES POST REVERSE TOTAL SHOULDER ARTHROPLASTY

Study	Slings	PROM	AROM	Resisted Exercise	Precaution
Boudreau et al ⁷	0-4 wk	0-6 wk: elevation, 90°-120°; ER, 30° 6-12 wk: flexion and ER as tolerated 12-16 wk: all movements as tolerated	0-6 wk: elbow, wrist, and hand 6-12 wk: shoulder as tolerated	0-6 wk: submaximal deltoid and scapular isometrics 6-12 wk: deltoid isometrics 12-16 wk: slow strength progression for deltoid and scapula 4+ mo: stretch and strengthen with maintenance programs	0-6 wk: avoid IR, adduction, and extension 6-12 wk: no adduction, IR, or extension 12-16 wk: do not exceed 1.4 kg, enforce good mechanics for elevation 4+ mo: 6.8 kg
Blacknall and Neumann ^{3*}	Comfort only	None	0-6 wk: assisted elevation to 90° and ER to 30° 6-12 wk: 0°-90° of active short level-arm flexion, inclined surface; progress to straight-arm flexion 12-16 wk: ROM as tolerated	0-3 wk: deltoid isometrics 3-6 wk: vigorous isometrics 6-12 wk: progress to isotonic as tolerated 12+ wk: progressive resistance	0-6 wk: avoid ER, IR, abduction, and extension
St Pierre and Frankle ⁵⁴	0-4 wk	0-6 wk: pendulums (supports for 2 wk, then unsupported) 6-12 wk: as tolerated 12-16 wk: as tolerated; add sleeper stretch	0-6 wk: elbow, wrist, and hand table slides for supported elevation and wand-assisted elevation in supine 12-16 wk: as tolerated	4-6 wk: shoulder isometrics, scapular musculature, and distal arm 6-10 wk: ER and IR 10 wk to 6 mo: weights to active exercise, wall push-ups, functional specificity	None
Romano et al ⁴⁶ (group A) [†]	0-2 wk	0-12 wk: as tolerated	0-6 wk: flexion to 60°-120°, ER to 20°-30° 6+ wk: as tolerated	0-6 wk: deltoid and scapular isometrics 6-12 wk: deltoid and scapular musculature using elastic band	0-6 wk: if subscapularis repaired, then no ER PROM for 4 wk and no resisted IR for 2 mo
Romano et al ⁴⁶ (group C) [†]	0-4 wk	0-12 wk: as tolerated	0-6 wk: flexion to 60°-120°, ER to 20°-30° 6+ wk: as tolerated	0-6 wk: deltoid and scapular isometrics 4 wk: begin AROM exercises 8 wk: deltoid and scapular musculature using elastic band	0-6 wk: if subscapularis repaired, then no ER PROM for 4 wk and no resisted IR for 2 mo
Wolff and Rosenzweig ⁶⁰	2-6 wk	0-6 wk: no PROM 6+ wk: as tolerated	Not reported	6-12 wk: deltoid and scapular strength progression: isometric to isotonic	0-6 wk: avoid IR, adduction, and extension 6-12 wk: continue avoiding adduction, IR, and extension 4+ mo: 6.8 kg

Abbreviations: AROM, active range of motion; ER, external rotation; IR, internal rotation; PROM, passive range of motion; ROM, range of motion.

*Time frames do not apply; progression is strictly criterion dependent.

[†]Differentiated progression into group A (cuff tear arthropathy, primary osteoarthritis cuff deficiency with pseudoparalysis), group B (all others not in A or C), and group C (rheumatoid arthritis, fracture).

GARRETT S. BULLOCK, PT, DPT¹ • GRANT E. GARRIGUES, MD²
LEILA LEDBETTER, MLIS³ • JUNE KENNEDY, PT, MS⁴

A Systematic Review of Proposed Rehabilitation Guidelines Following Anatomic and Reverse Shoulder Arthroplasty



Prothèse totale inversée

Attelle

0 à 4 semaines

Mobilisation
passive

0 à 6 semaines

Flexion 90-120°

RE 30°

6 à 12 semaines

Flexion et ER sous douleur

12 à 16 semaines

Tous les mouvements

Mobilisation
active
aidée/active

0 à 6 semaines

Poignet, main, coude

6-12 semaines

Tous les mouvements sous la douleur

renforcement

0-6 semaines

Deltoïde et m.scap sous max en isométrique

6-12 semaines

Deltoïde en isométrique

12-16 semaines

Deltoïde et m.scap progressif

4 mois et +

Programme d'entretien de renforcement

Considérations

Eviter main dans le dos (1.5 à 3 mois)

Pas plus de 1.5 kg pendant les 4 premiers mois

%MVIC 0-20, light grey: %MVIC 20-40, dark grey: %MVIC 40-60.

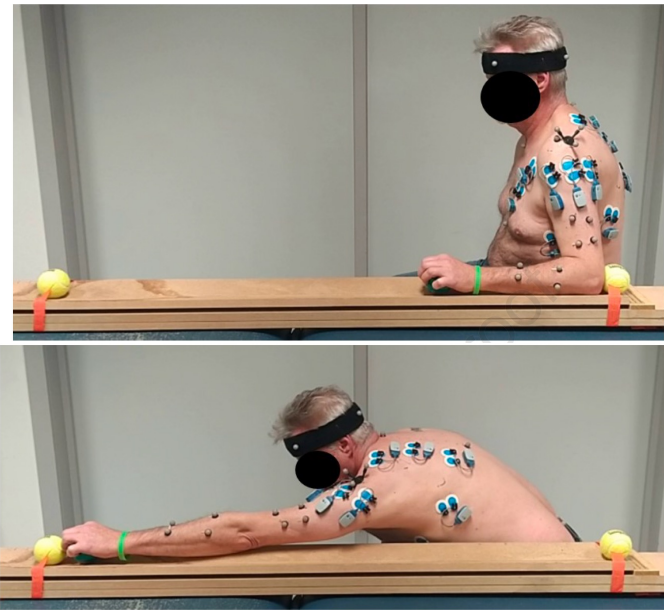
AD	BS	BSTB	WS	FF	SCAP	REACH
MD	BS	BSTB	WS	REACH	FF	SCAP
PD	BSTB	BS	WS	FF	REACH	SCAP
PMc	BS	BSTB	SCAP	WS	REACH	FF
PMs	BS	BSTB	SCAP	WS	REACH	FF
LD	BS	BSTB	SCAP	WS	FF	REACH
UT	BS	BSTB	WS	REACH	FF	SCAP
MT	BSTB	BS	FF	WS	REACH	SCAP
LT	BSTB	BS	FF	REACH	WS	SCAP
SA	BS	BSTB	SCAP	WS	FF	REACH



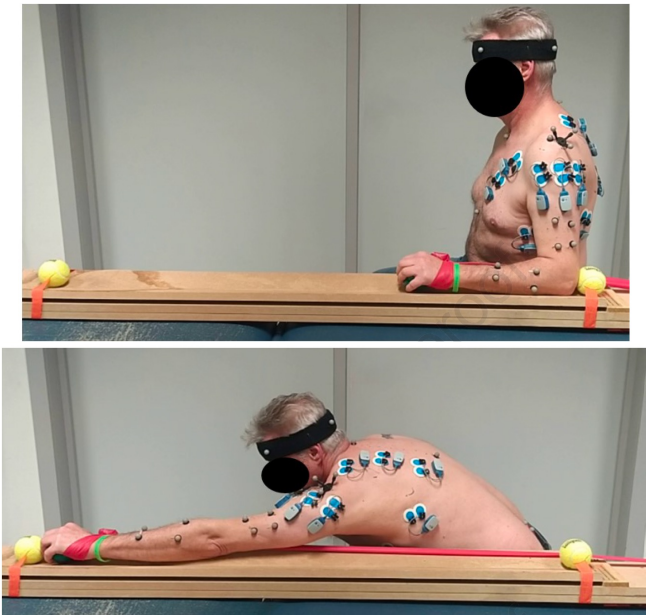
Electromyographic analysis of selected shoulder muscles during shoulder rehabilitation exercises in patients after reversed shoulder arthroplasty

Dominiek Vandenbosch, PT, MSc, Alexander Van Tongel, MD, PhD, Lieven De Wilde, MD, PhD, Ann M. Cools, PT, PhD

20% MVIC



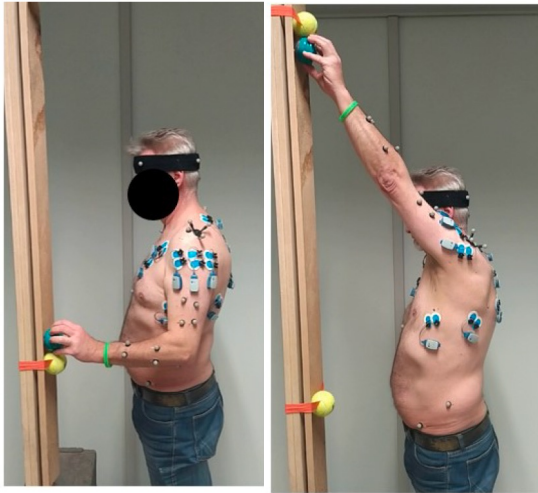
BS



BSTB

20% -40% MVIC

40%-60% MVIC



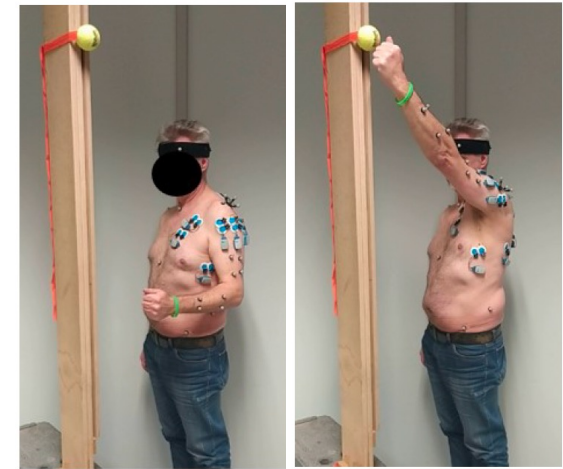
WS



FF



SCAP



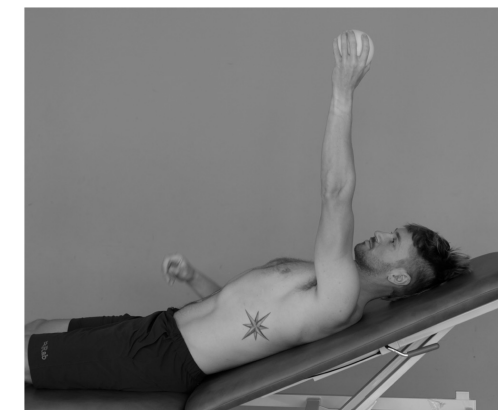
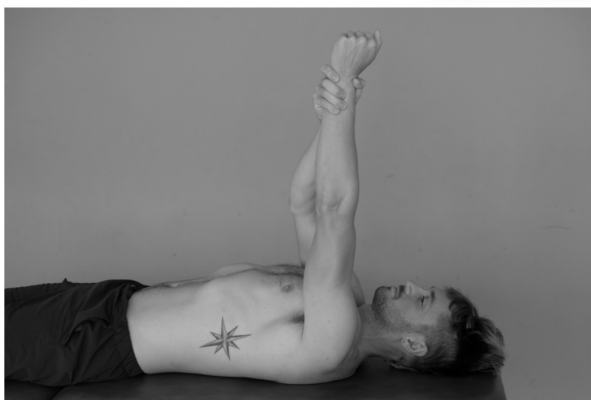
REACH

Programme « Levy »

ELECTROMYOGRAPHIC ANALYSIS OF SELECTED SHOULDER MUSCLES DURING A SERIES OF EXERCISES, COMMONLY USED IN PATIENTS WITH SYMPTOMATIC DEGENERATIVE ROTATOR CUFF TEARS

Ann M. Cools, PT, PhD, Alexander Van Tongel, MD, PhD, Kelly Berckmans, PT, MsC, Valentien Spanhove, PT, MsC, Tibo Plaetevoet, PT, MsC, Jonas Rosseel, PT, MsC, Jasper Soen, PT, MsC, Ofer Levy, MD MCh(Orth) FRCS, Annelies Maenhout, PT, PhD

	AD		MD		PD		UT		SA	
Exercise	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
10	8,18	4,67	2,43	1,72	1,4	1,37	1,54	0,93	2,54	1,5
11	10,35	4,48	2,96	1,97	1,21	0,56	1,42	0,86	3,13	2,2
12	12,09	4,28	4,06	2,76	1,9	1,1	2,14	2,66	4,08	2,55
13	32,7	10,35	17,39	15,14	3,47	1,62	15,94	11,31	8,7	5,3



Retour aux sports après prothèse?

Return to sports and physical work after anatomical and reverse shoulder arthroplasty

Yohei Shimada, MD^{a,b}, Keisuke Matsuki, MD^{a,*}, Hiroyuki Sugaya, MD^c, Norimasa Takahashi, MD^a, Morihito Tokai, MD^c, Eiko Hashimoto, MD^b, Nobuyasu Ochiai, MD^b, Seiji Ohtori, MD^b

Return to sport after reverse total shoulder arthroplasty is highly frequent: a systematic review

Edoardo Franceschetti,¹ Edoardo Giovannetti de Sanctis ,² Pietro Gregori,¹ Alessio Palumbo,¹ Michele Paciotti,¹ Giovanni Di Giacomo,³ Francesco Franceschi⁴

Return to sport after shoulder arthroplasty: a systematic review

Julie Küffer¹
Mohy E. Taha²
Pierre Hoffmeyer³
Gregory Cunningham^{3,4}

Return to Sport After Shoulder Arthroplasty in Recreational Athletes

A Systematic Review and Meta-analysis

Florence Aim,^{*} MD, Jean-David Werthel,^{*} MD, Julien Deranlot,[†] MD, Marie Vigan,[‡] PhD, and Geoffroy Nourissat,^{§||} MD, PhD

Investigation performed at Groupe Maussins, Paris, France

Sports Participation After Reverse Total Shoulder Replacement

Hilal S.A. Al Housni,^{*,†} MD, Patrick H. Lam,^{*,‡} MD, PhD, Joseph W. Latif,[‡] MD and George A.C. Murrell,^{*,§} MD, DPhil

Investigation performed at Orthopaedic Research Institute, St George Hospital Campus, University of New South Wales, Sydney, Australia

Return to sport after shoulder arthroplasty: a systematic review and meta-analysis

Joseph N. Liu¹ · Michael E. Steinhaus¹ · Grant H. Garcia¹ · Brenda Chang² · Kara Fields² · David M. Dines³ · Russell F. Warren³ · Lawrence V. Gulotta³

Return to Sport after Anatomic and Reverse Total Shoulder Arthroplasty in Elderly Patients: A Systematic Review and Meta-Analysis

Rocco Papalia¹, Mauro Ciuffreda¹, Erika Albo^{1,*}, Chiara De Andreis¹, Lorenzo Alirio Diaz Balzani¹, Anna Maria Alifano¹, Chiara Fossati^{2}, Andrea Macaluso², Riccardo Borzuola², Antonio De Vincentis^{1} and Vincenzo Denaro¹

Return to sport following reverse shoulder arthroplasty: a systematic review

Matthew G. Davey, MB, BCh, MCh^a, Martin S. Davey^{a,b}, Eoghan T. Hurley, MB, BCh, MCh^{a,b,*}, Muhamed Gaafar, FRCS (Tr & O), Leo Pauzenberger, MD^b, Hannan Mullett, MCh, FRCS (Tr & Orth)^b



Taux et timing?



**Total
Shoulder
Arthroplasty
(TSA)**

64 y

63.3% (29.5 - 97.3)

77.4% (57.1 - 97.3)

**Reverse Shoulder
Arthroplasty
(RSA)**

74 y

65.1% (23.5 - 93.0)

75% (40.0 - 93.0)

Taux et timing?



7
months

Total Shoulder Arthroplasty

Reverse Shoulder Arthroplasty

7.9 months

6.2 months

7.3 months

5.3 months





Age < 55 ou > 70

Status Pre-op

Genre

Niveau de satisfaction et d'attente

Peur et douleur

Les 4 sports les plus populaires?



TSA

83%

87%

85%

75%

RSA

79%

59%

94%

38%

Take Home Message



Les patients peuvent retrouver leurs activités sportives

MAIS

Doit être adapté sur mesure en fonction des objectifs du patient, la chirurgie et les status pré-op et post-op

Les instabilités de l'épaule



Définition

Shoulder instability is a symptomatic abnormal motion of the glenohumeral joint (GHJ), which can present as pain or a sense of displacement (subluxation or dislocation).¹ The shoulder is the most

10%

Des blessures de
l'épaule

96%

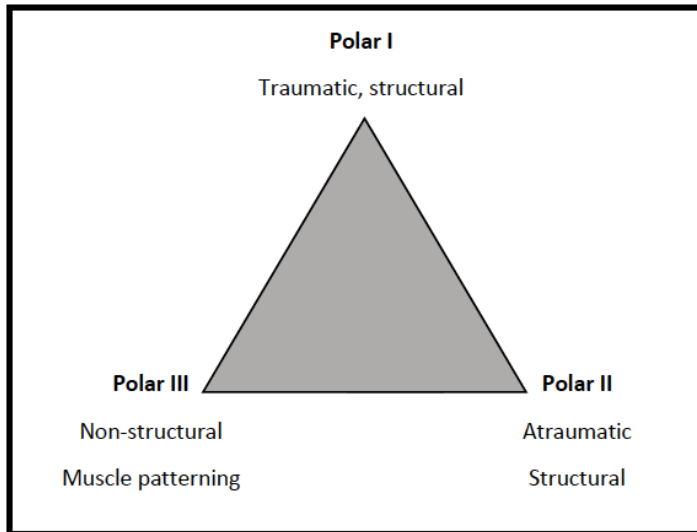
Suite à un
événement
traumatique

4%

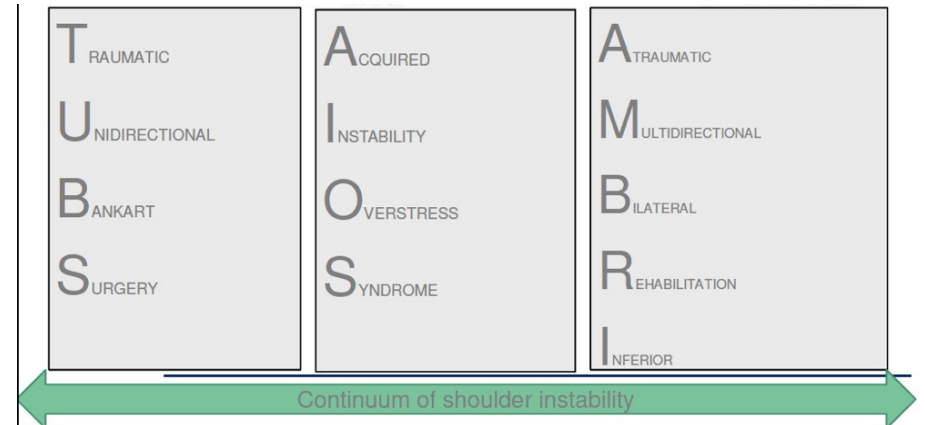
Non traumatique/ surutilisation

classification

Stanmore



Thomas and Matsen



Ann Cools

FEDS

FREQUENCY–The patient is asked, “How many episodes have you had in the last year?”

Solitary – ‘1 Episode’
Occasional- ‘2 -5 Episodes’
Frequent – ‘>5 Episodes’

ETIOLOGY – The patient is asked, ‘Did you have an injury to cause this?’

Traumatic – ‘Yes’
Atraumatic – ‘No’

DIRECTION – The patient is asked, ‘What direction does the shoulder go out most of the time?’

Anterior- ‘Out the Front’
Inferior- ‘Out the Bottom’
Posterior- ‘Out the Back’

The direction is confirmed at the time of the physical examination using provocative tests. During translation testing, the physician asks, which one of the following directions most closely reproduces your symptoms, and then translates anterior, inferior, and posterior. To confirm, the physician may ask which one of these tests most closely reproduces your symptoms: and the anterior apprehension test, the sulcus test, and the posterior jerk test is performed. With the history and physical examination using provocative tests, the patient should be able to distinguish and identify the *primary* direction of his or her instability.

SEVERITY–The patient is asked, ‘Have you ever needed help getting the shoulder back in joint?’

Subluxation– ‘No’
Dislocation – ‘Yes’

Surgical Outcomes in the Frequency, Etiology, Direction, Severity (FEDS) Classification System for Shoulder Instability

Justin A. Magnuson, BA¹, Brian R. Wolf, MD, MS², Kevin J. Cronin, MD, MS³, Cole A. Jacobs, PhD⁴, Shannon F. Ortiz, MPH⁵, John E. Kuhn, MD, MS⁵, MOON Shoulder Group, Carolyn M. Hettrich, MD, MPH⁶

¹University of Kentucky Orthopaedic Surgery and Sports Medicine, Lexington, KY, USA

²University of Iowa Hospitals and Clinics, Iowa City, IA, USA

³Department of Orthopaedic Surgery and Rehabilitation, Vanderbilt University Medical Center, Nashville, TN, USA

⁴Department of Orthopaedic Surgery, Brigham Women's Hospital, Boston, MA, USA

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

Acquise
Instabilité
Over/surutilisation
Syndrome

Atraumatique
Multidirectionnelle
Bilatérale
Rééducation
Inferieure

Continuum de l'instabilité



Epidémiologie

Descriptive Epidemiology of the MOON Shoulder Instability Cohort

Matthew J. Kraeutler,* MD, Eric C. McCarty, MD, John W. Belk, Brian R. Wolf, MD, MS, Carolyn M. Hettrich, MD, MPH, Shannon F. Ortiz, MPH, MOON Shoulder Instability Group, and Jonathan T. Bravman, MD
Investigation performed at CU Sports Medicine and Performance Center, Department of Orthopedics, University of Colorado School of Medicine, Boulder, Colorado, USA

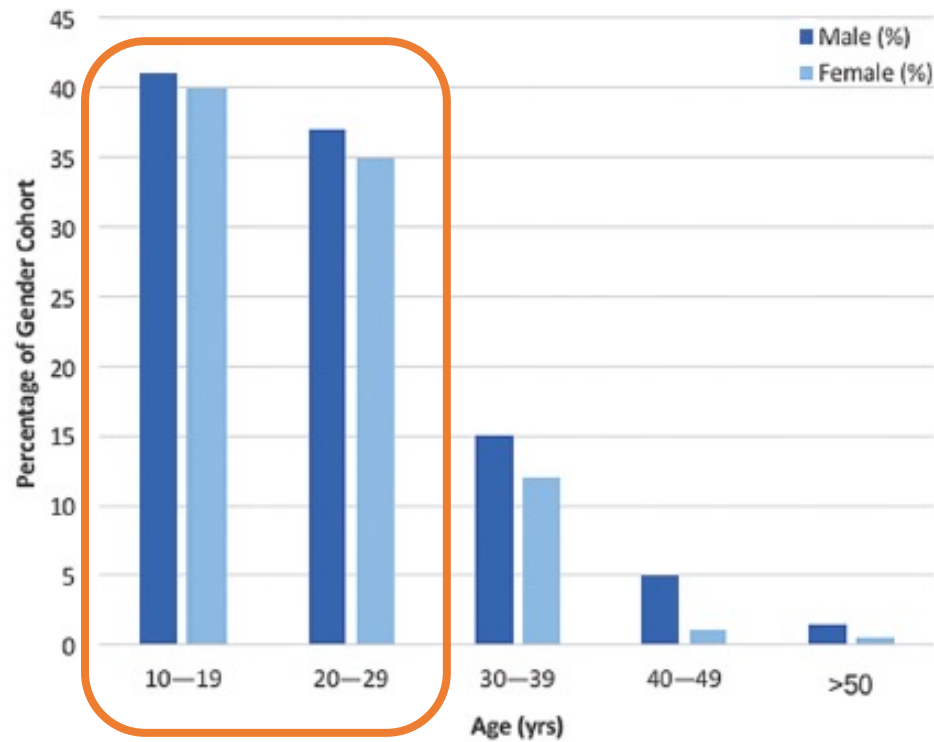


Figure 1. Age at the time of enrollment.

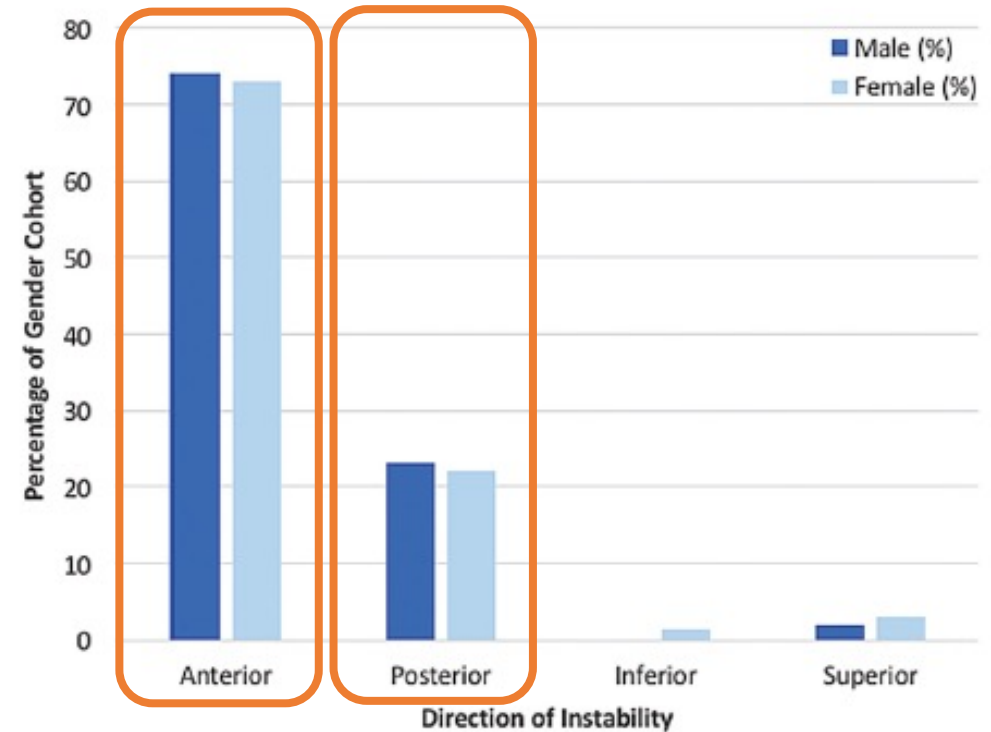


Figure 2. Direction of instability.

TABLE 8
MRI Findings^a

Abnormality	Overall (n = 798)	Anterior Instability (n = 581)	Posterior Instability (n = 291)
Anterior labral tear	528 (66)	488 (84)	32 (11)
Hill-Sachs lesion	326 (41)	294 (51)	10 (3)
Posterior labral tear	242 (30)	67 (12)	9 (3)
SLAP tear	146 (18)	99 (17)	31 (10)
Anterior glenoid bone loss	122 (15)	122 (21)	0 (0)
ALPSA	49 (6)	49 (8)	0 (0)
GLAD	26 (3)	23 (4)	3 (1)
HAGL	20 (3)	13 (2)	0 (0)
Reverse Hill-Sachs lesion	15 (2)	0 (0)	15 (5)
Posterior glenoid bone loss	11 (1)	2 (0.3)	9 (3)
Biceps lesion	9 (1)	6 (1)	2 (0.7)
Effusion	7 (0.9)	6 (1)	1 (0.3)
Spinoglenoid cyst	5 (0.6)	0 (0)	4 (1)
Supraspinatus tear	5 (0.6)	4 (0.7)	0 (0)
Infraspinatus tear	2 (0.3)	2 (0.3)	0 (0)
Subscapularis tear	2 (0.3)	1 (0.2)	0 (0)

^aData are presented as n (%). Percentages are based on the entire cohort of patients who had an MRI scan or those patients diagnosed with anterior or posterior instability, respectively. ALPSA, anterior labroligamentous periosteal sleeve avulsion; GLAD, glenolabral articular disruption; HAGL, humeral avulsion of the glenohumeral ligament; MRI, magnetic resonance imaging; SLAP, superior labrum from anterior to posterior.

Lésions associées

Lésions neurologiques

- Prévalence 10%
- 2/3 au niveau du nerf axillaire
- Nerf ulnaire et plexus brachial 10-15%

Fracture du tubercule majeur

- Prévalence 15%
- Âge moyen 60 ans

Rupture de la coiffe

- Prévalence 10 à 30%
- Âge moyen 69 ans

SCIENTIFIC ARTICLES

Injuries Associated with Traumatic Anterior Glenohumeral Dislocations

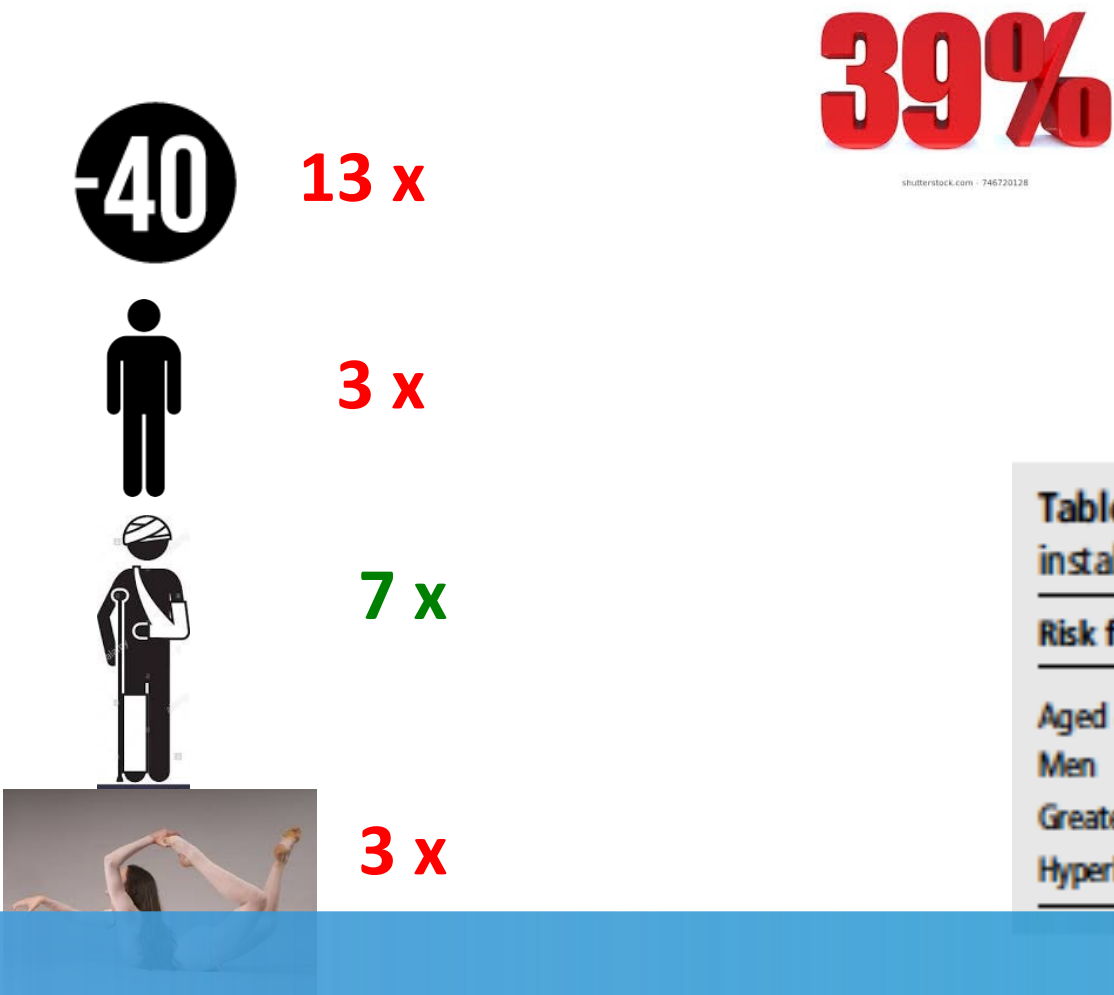
Robinson, C.M. BMedSci, FRCSEd¹; Shur, N. MBChB¹; Sharpe, T. FRACS¹; Ray, A. MBChB¹; Murray, I.R. BMedSci, MRCSEd¹

[Author Information](#)

The Journal of Bone & Joint Surgery 94(1):p 18-26, January 4, 2012. | DOI: 10.2106/JBJS.J.01795



Quels sont les facteurs de risques qui peuvent augmenter le risque de récurrence suite à un premier épisode de luxation?



Review

 **OPEN ACCESS**

Risk factors which predispose first-time traumatic anterior shoulder dislocations to recurrent instability in adults: a systematic review and meta-analysis

M Olds,¹ R Ellis,² K Donaldson,¹ P Parmar,¹ P Kersten³

Table 7 Summary of risk factors and relationship with recurrent instability

Risk factor	Rate of recurrence
Aged 40 years and under	13 times more likely
Men	3 times more likely
Greater tuberosity fracture	7 times less likely
Hyperlaxity	3 times more likely



Examen clinique



Tests cliniques

Peur/appréhension Amélioration des symptômes



Apprehension test
Relocation test
Anterior release test

Laxité



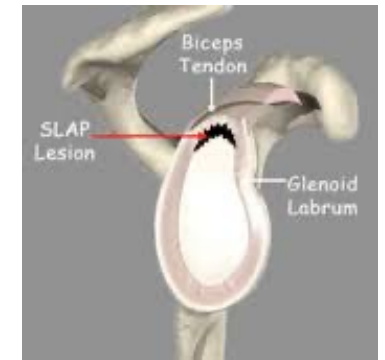
Anterior drawer test
posterior drawer test
Load and shift
Sulcus sign

Hyper laxité



Hyperabduction test (Gagey)
Beighton scale

Slap test



Biceps load
Speed test
O'Brien

Beighton



THE BEIGHTON SCORING SYSTEM
Measuring joint hypermobility

A. 5th FINGER / 'PINKIES'

Test **both sides**: Rest palm of the hand and forearm a **flat surface** with palm side down and fingers out straight.

Can the **fifth finger** be bent/lifted upwards at the knuckle to go back **beyond 90 degrees**?

If yes, add **one point** for each hand.



1 POINT FOR EACH HAND

B. THUMBS

Test **both sides**: With the arm out straight, the palm facing down, and the wrist then fully bent downward, can the thumb be pushed back to touch the forearm?

If yes, add **one point** for each thumb.



1 POINT FOR EACH THUMB

C. ELBOWS

Test **both sides**: With arms outstretched and palms facing upwards, does the elbow extend (bend too far) upwards **more than an extra 10 degrees** beyond a normal outstretched position?

If yes, add **one point** for each side.



1 POINT FOR EACH ARM

D. KNEES

Test **both sides**: While standing, with knees locked (bent backwards as far as possible), does the lower part of either leg extend **more than 10 degrees forward**?

If yes, add **one point** for each side.



1 POINT FOR EACH LEG

E. SPINE

Bend forward, can you place the palms of your hands **flat on the floor in front of your feet** without bending your knees?

If yes, add **one point**.



1 POINT

Être ou ne pas être opéré?



Anterior Shoulder Instability Part I—Diagnosis,
Nonoperative Management, and Bankart Repair—An
International Consensus Statement



Eoghan T. Hurley, M.B., B.Ch., M.Ch., Ph.D., Bogdan A. Matache, M.D., C.M., F.R.C.S.C.,
Ivan Wong, M.D., F.R.C.S.C., Eiji Itoi, M.D., Ph.D., Eric J. Strauss, M.D.,
Ruth A. Delaney, F.R.C.S., Lionel Neyton, M.D., George S. Athwal, M.D., F.R.C.S.C.,
Leo Pauzenberger, M.D., Hannan Mullett, M.Ch., F.R.C.S.I. (Tr & Orth),
Laith M. Jazrawi, M.D., and The Anterior Shoulder Instability International Consensus
Group

Q: What are the indications for nonoperative management?

92%

Strong Consensus

A: The primary relative indications for nonoperative management include a) low risk of recurrence, b) patient preference to avoid surgery, c) low functional demand, d) primary instability, e) no glenoid bone loss, f) >30 years old or <14 years old, and g) timing in-season to allow for return to play.

Q: What are the contraindications for nonoperative management?

92%

Strong Consensus

A: The primary relative contraindications for nonoperative management include a) multiple instability events, b) high risk for further recurrence, c) severe glenoid bone loss or large bony fragment, d) instability in low-energy mechanisms, e) collision athletes, and f) competitive athletes.

Q: Does immobilization play a role in the nonoperative management of anterior shoulder instability? If so, for what duration of time?

92%

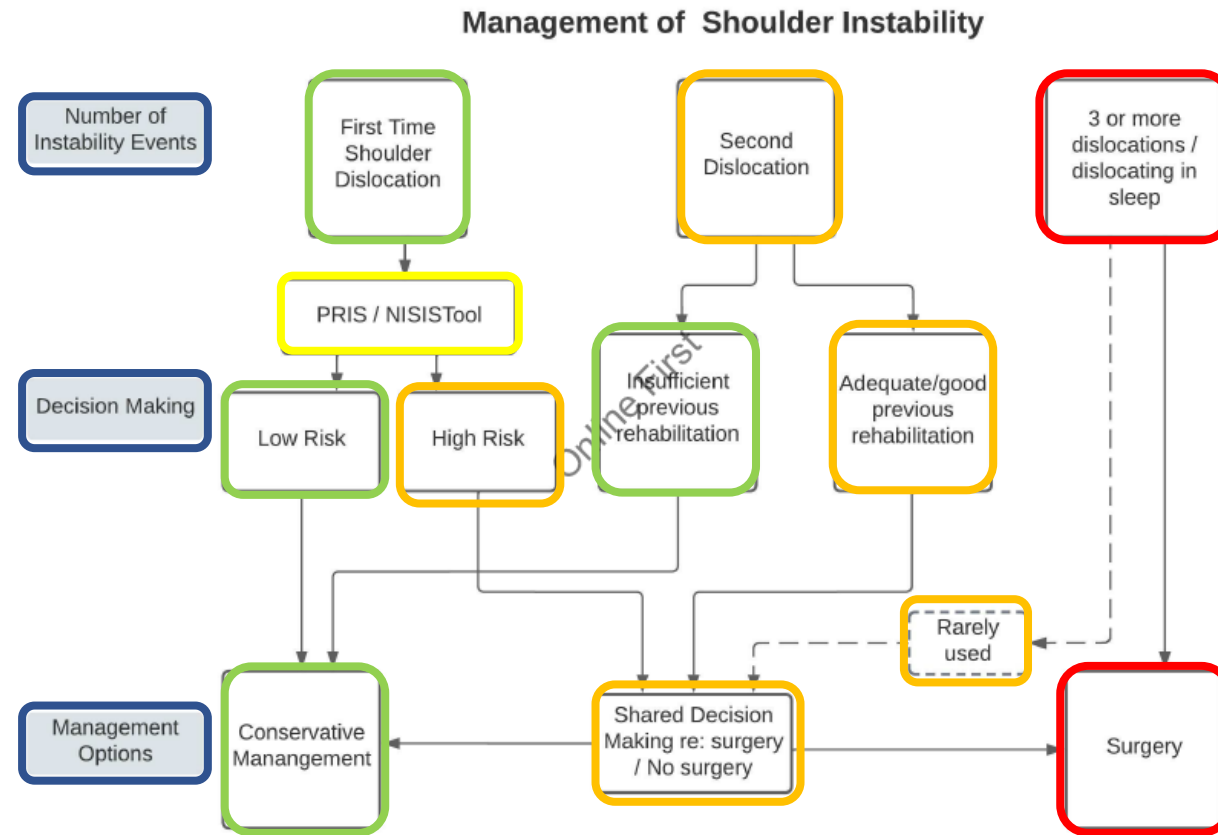
Strong Consensus

A: Immobilization may play a role in the early phase of non-operative management of anterior shoulder instability; however, it is unclear how long patients may require to be immobilized.



doi: 10.4085/1062-6050-0468.22

Title: Current Clinical Concepts: Nonoperative Management of Shoulder Instability



PREDICT RECURRENT INSTABILITY OF THE SHOULDER

A TOOL TO PREDICT RECURRENT SHOULDER INSTABILITY AFTER A FIRST TIME SHOULDER DISLOCATION

We have recently published a tool (Predict Recurrent Instability of the Shoulder (PRIS)) that enables clinicians to predict recurrent shoulder instability after a first time traumatic anterior shoulder dislocation (FTASD). We undertook two blinded prospective cohort studies in New Zealand, the first to develop the tool (which can be read [here](#)), and the second to validate the tool. The PRIS tool shows that we can predict who is not going to have recurrent shoulder instability with 80% accuracy. The following variables can be used to predict recurrent instability in a population of people with FTASD.

VARIABLES THAT PREDICT RECURRENT SHOULDER INSTABILITY

Variables that have been shown to predict recurrent shoulder instability after a FTASD are age (16-25 years), dislocation in the dominant arm, immobilisation, bony bankart lesion, SPADI scores and TSK-11 scores. Our research has shown that the following variables predict recurrent shoulder instability with a specificity of 95%, accuracy of 80 % and sensitivity of 35%. **This means that the tool is good at finding people who are not going to have recurrent shoulder instability with 80% accuracy.** However, it is not that good at finding people who are going to have recurrent shoulder instability. Further work is required to improve the sensitivity of this tool.

Our data shows that the following equation is able to predict shoulder instability. Please enter your patient's details in the following boxes to aid decision-making regarding recurrent anterior shoulder instability

[Click here for the Spanish version](#)

Age?

- ☐ 16-25 years
☐ 26-40 years

Previous dislocation was in?

- ☐ Dominant arm
☐ Non-dominant arm

Was your shoulder Immobilised? (for ANY period of time)

- ☐ Yes
☐ No

Did you suffer from a Bony Bankart lesion?

- ☐ Yes
☐ No

Shoulder pain and function (SPADI score)?

Kinesiophobia score (TSK-11)?

CALCULATE RISK

<https://margieolds.com/pris/>



Prise en charge



Prise en charge

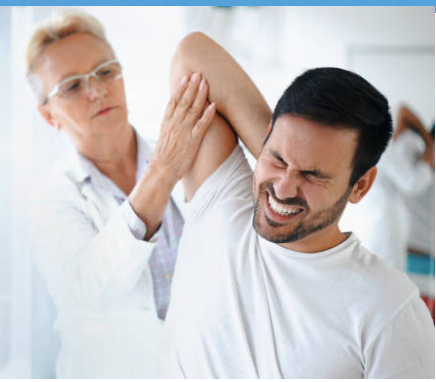
Review

The challenge of the sporting shoulder: From injury prevention through sport-specific rehabilitation toward return to play

Ann M. Cools^{a,b,*}, Annelies G. Maenhout^a, Fran Vanderstukken^a, Philippe Declève^{a,c}, Fredrik R. Johansson^d, Dorien Borms^a



L'irritabilité



Staged Approach for Rehabilitation Classification: Shoulder Disorders (STAR–Shoulder)

Philip W. McClure, Lori A. Michener

- Douleur >7/10
- Douleur la nuit/en dormant
- Douleur constante au repos
- Douleur avant la fin d'amplitude (examen clinique)
- Douleur irradiant au-dessus du coude
- Handicap élevé

- Douleur modérée 4-6 /10
- Douleur variable la nuit
- Pas de douleur au repos
- Douleur en fin d'amplitude (examen clinique)
- Douleur dans le bras
- Handicap modérée

- Douleur < 3/10
- Pas de douleur la nuit
- Pas de douleur au repos
- Douleur minimale lors de la surpression (examen clinique)
- Douleur région épaule
- Handicap faible



Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

Acquise
Instabilité
Over/surutilisation
Syndrome

Atraumatique
Multidirectionnelle
Bilatérale
Rééducation
Inferieure

Continuum de l'instabilité



Traumatisme
Unidirectionnel
Bankart
S(c)hirurgie

Principes généraux

Contrôle
musculaire
local

- Améliorer la co-activation de la coiffe des rotateurs
- Dès la phase d'immobilisation

Exercices
en chaîne
fermée

- Exercices en chaîne fermée lors des phases précoces de la rééducation (charge faible à modérée)

Exercices
en chaîne
ouverte

- Progression vers les exercices en chaîne ouverte dans le but de la récupération fonctionnelle

Chaîne
cinétique
et RTP

- Retour aux sports (12 semaines à 6 mois)



Acquise
Instabilité
Over/surutilisation
Syndrome

Principes généraux



Contrôle
musculaire
local

- Diminuer les symptômes et la peur de l'instabilité en position ABER (exercice de relocation)

Exercices en
chaîne
fermée

- Se focaliser sur les demandes spécifiques du sport et des positions (pas de chaîne fermée si pas spécifique)

Exercices
en chaîne
ouverte

- Implémenter des exercices dans les positions des demandes spécifiques du sport.
- Stretch structures post si nécessaire

Chaîne
cinétique
et RTP

- Travailler les mécanismes de décélération.
- pliométrie

Contrôle musculaire local



1. Réaliser une RE contre résistance (et palper l'infra-épineux)
2. De la contraction à la co-contraction en relâchant progressivement notre résistance (simuler qu'on pousse)
3. Co-contraction du couple de force (RI-RE) de manière consciente avec feedback externe (simuler qu'on pousse vers le mur) 30 secondes

Se focaliser sur la « relocation »

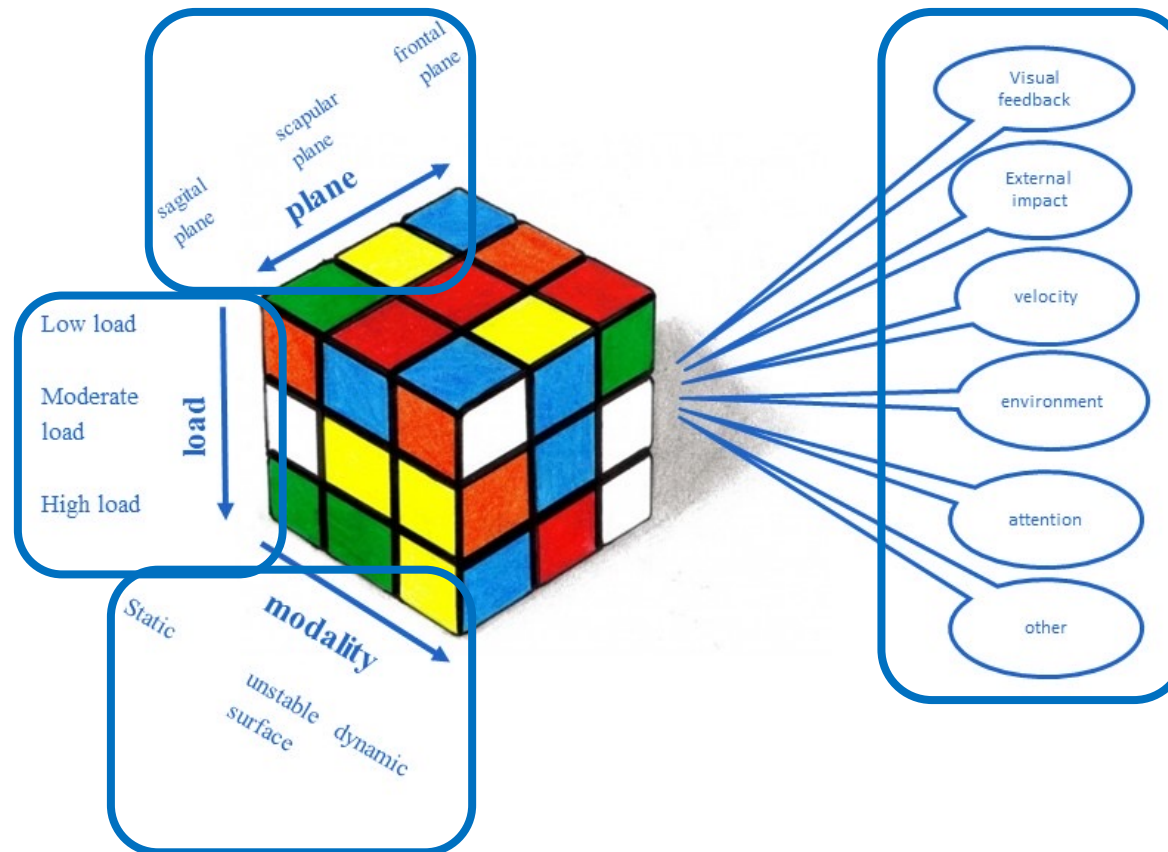
1. Coucher dorsal, bras soutenu par la cuisse
2. Idem, sans support de la cuisse
3. Debout (main sur la partie antérieure)

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

Acquise
Instabilité
Over/surutilisation
Syndrome

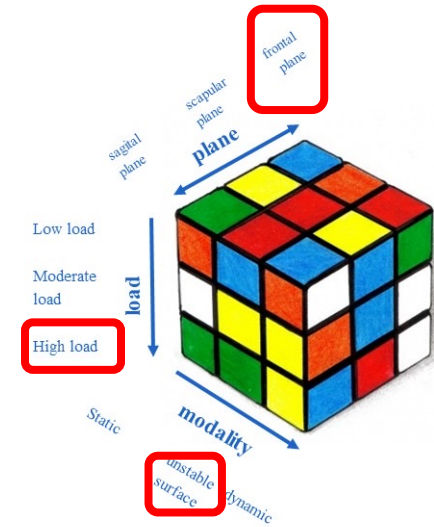
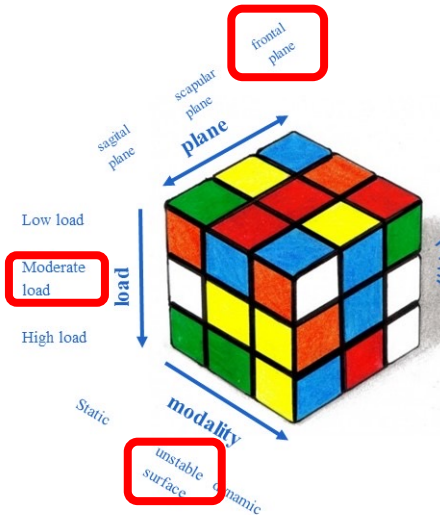
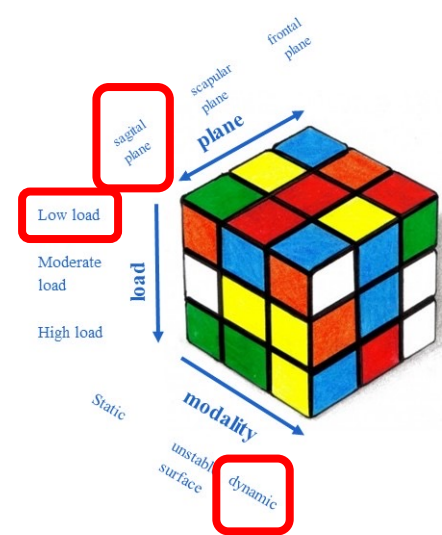
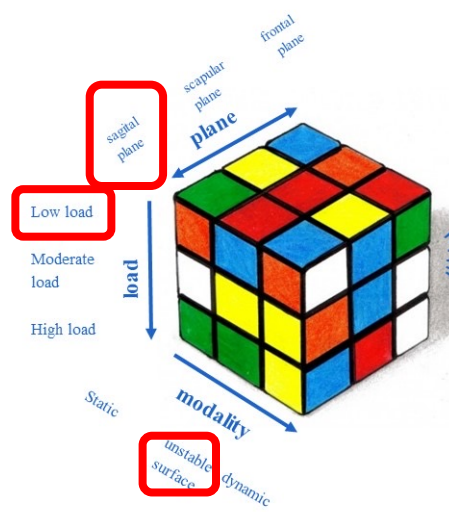
Exercices en chaîne fermée

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie



Acquise
Instabilité
Over/surutilisation
Syndrome

Exercices en chaîne fermée





Exercices en chaîne ouverte

Renforcement analytique
(force, endurance, hypertrophie?)

Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

Renforcement
« pliométrie »

Renforcement
« excentrique »

Exercices en chaîne ouverte

Renforcement analytique
(force, endurance, hypertrophie?)

Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

Renforcement
« pliométrie »

Renforcement
« excentrique »

Exercices en chaîne ouverte analytique

[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD² • CHRIS LITTLEWOOD, PhD²
TIM ACKLAND, PhD³ • ALLAN WANG, FRACS, PhD^{3,4}

A Systematic Review of Electromyography
Studies in Normal Shoulders to Inform
Postoperative Rehabilitation Following
Rotator Cuff Repair



Acquise
Instabilité
Over/surutilisation
Syndrome

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

50 à 75%MVC

Exercices en chaîne ouverte analytique

[RESEARCH REPORT]

PETER K. EDWARDS, MSc¹ • JAY R. EBERT, PhD¹ • CHRIS LITTLEWOOD, PhD²
TIM ACKLAND, PhD¹ • ALLAN WANG, FRACS, PhD^{3,4}

A Systematic Review of Electromyography
Studies in Normal Shoulders to Inform
Postoperative Rehabilitation Following
Rotator Cuff Repair

Acquise
Instabilité
Over/surutilisation
Syndrome

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

75 à 95-100%MVC

Exercices en chaîne ouverte

Analytique



Exercices en chaîne ouverte

Renforcement analytique
(force, endurance, hypertrophie?)
(somatosensoriel/proprioception)

Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

Renforcement
« pliométrie »

Renforcement
« excentrique »

Protocole de lancer en vue d'une reprise de sport « overhead »

Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

Acquise
Instabilité
Over/surutilisation
Syndrôme



RI & RE
en position neutre



Diagonale avec
charge limitée en
Abd RE



Diagonale avec
charge importante
en Abd RE (v1)



Diagonale avec
charge importante
en Abd RE (v2)



Mouvements
rapides en
Abd RE

Exercices en chaîne ouverte

Renforcement analytique
(force, endurance, hypertrophie?)
(somatosensoriel/proprioception)

Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

Renforcement
« pliométrie »

Renforcement
« excentrique »

CURRENT CONCEPTS OF PLYOMETRIC EXERCISE

George Davies, PT, DPT, SCS, ATC, MEd, CSCS, FAPTA¹Bryan L. Riemann, PhD, ATC, FNATA¹Robert Manske, PT, DPT, SCS, ATC, MEd, CSCS^{2,3}

Lors de la phase de réathlétisation.

Permet le développement de **la puissance**, élément crucial pour le sport.

Adapter à chaque patient et aux activités qu'il souhaite reprendre.

Critères (sur base des experts)

Cicatrisation des tissus opérés

Absence de douleur

Amplitudes articulaires dans les limites de la **normalité**

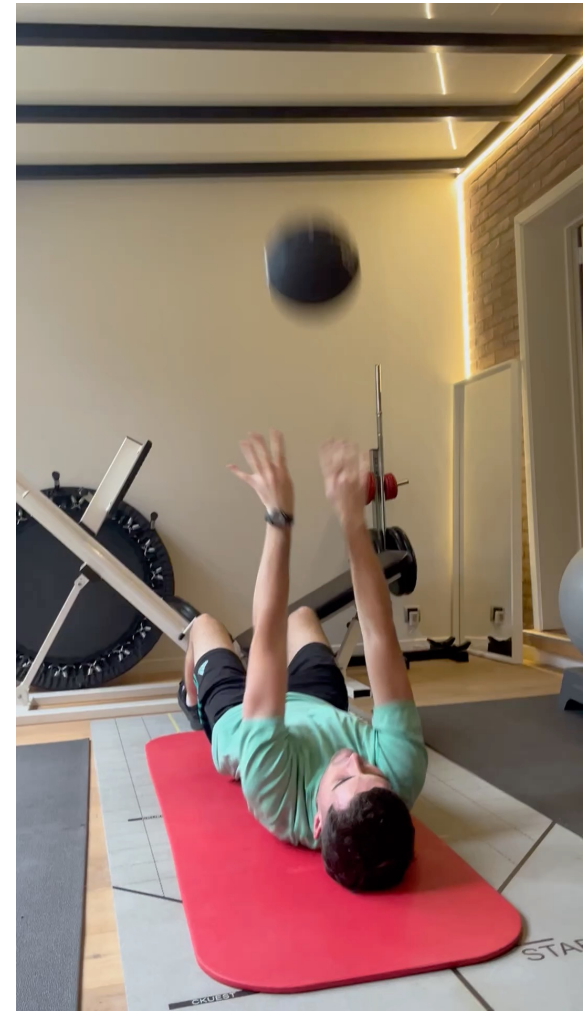
Testing musculaire 5/5 (manuel) ou 80% (test HHD)

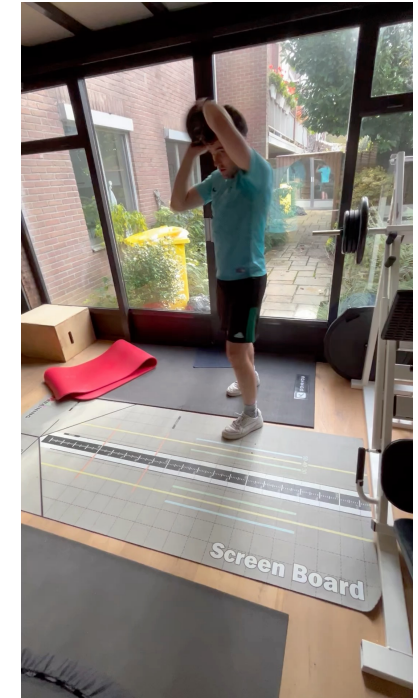
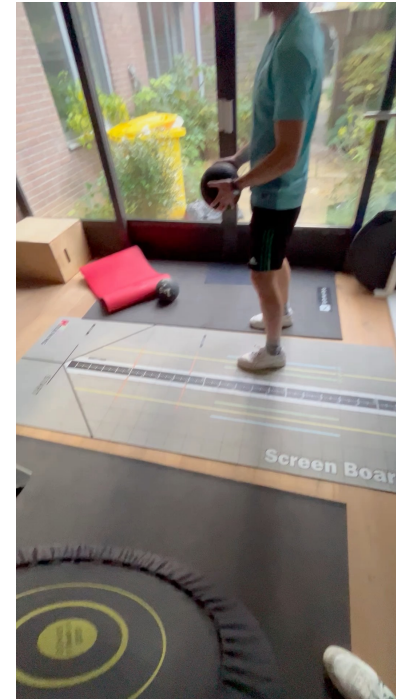
CKQUEST (hommes 21 touches/femmes 23 touches)

Repos 48-72 h

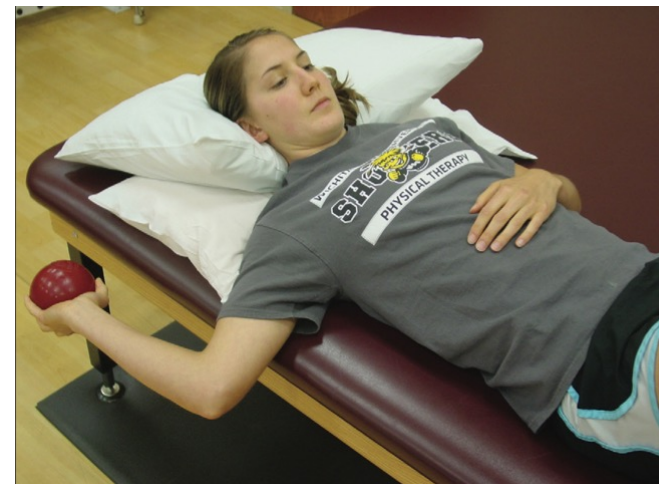
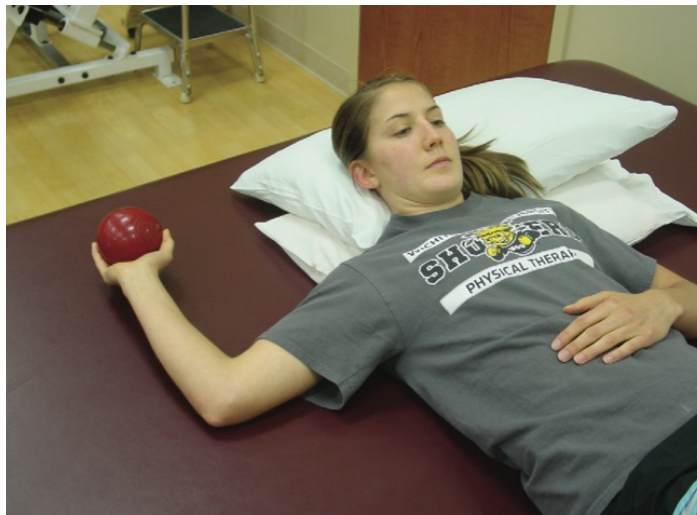
Progression

- 2 mains vers 1 main
- Proche du corps vers éloigné du corps
- Vitesse lente vers rapide
- Mouvements contrôlés vers mouvements explosifs
- Faibles répétitions vers répétitions élevées
- Simple plan vers plan fonctionnel/spécifique au sport









Exercices en chaîne ouverte

Renforcement analytique
(force, endurance, hypertrophie?)
(somatosensoriel/proprioception)

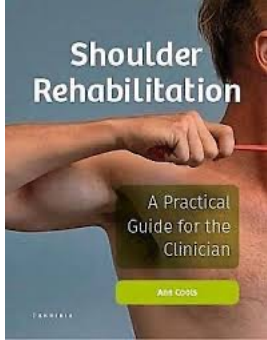
Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

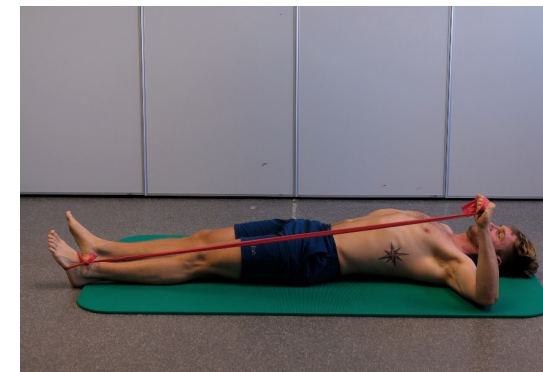
Renforcement
« pliométrie »

Renforcement
« excentrique »

Excentrique



Acquise
Instabilité
Over/surutilisation
Syndrome



Traumatique
Unidirectionnel
Bankart
S(c)hirurgie

Exercices en chaîne ouverte

Chaîne cinétique

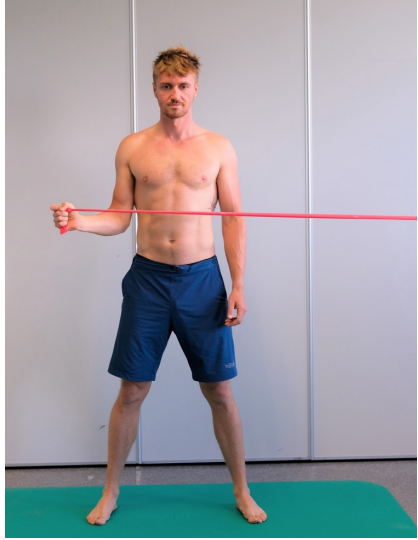
Renforcement analytique
(force, endurance, hypertrophie?)
(somatosensoriel/proprioception)

Cibler les exercices les plus
spécifiques en fonction des
besoins du patient

Renforcement
« programme de lancer »

Renforcement
« pliométrique »

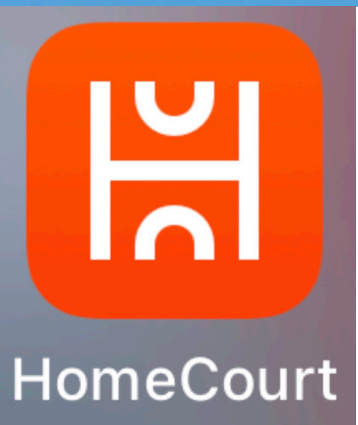
Renforcement
« excentrique »



Exemple d'intégration de la chaîne cinétique en fonction du patient





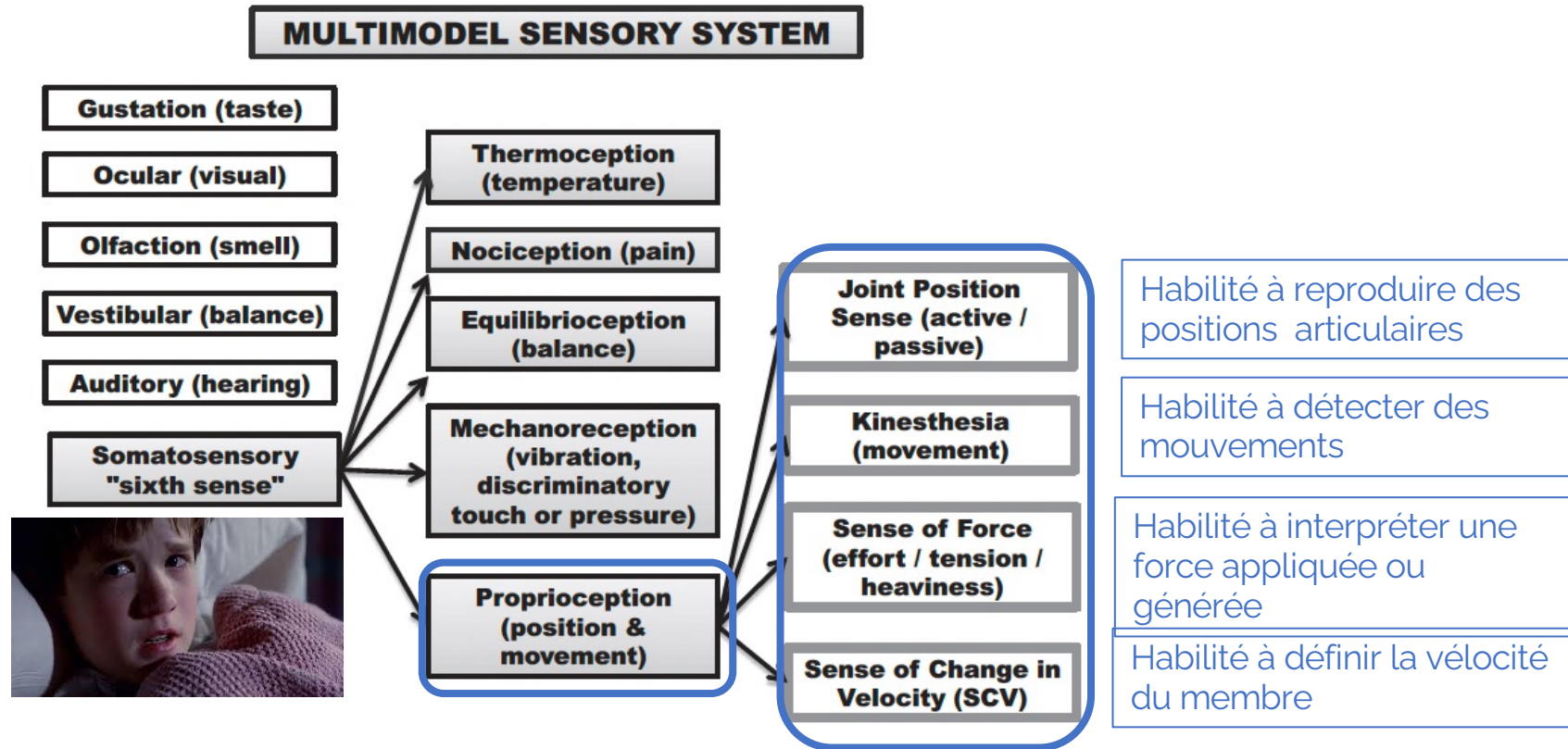


Proprioception

Proprioception: How is it affected by shoulder pain?

A systematic review

Amanda L. Ager PT, PhD (c)^{a,b,*}, Dorien Borms PT, PhD (c)^b, Lode Deschepper MSc PT^b,
Robin Dhooghe MSc PT^b, Jason Dijkhuis MSc PT^b, Jean-Sébastien Roy PT, PhD^{a,c},
Ann Cools PT, PhD^{a,b,*}



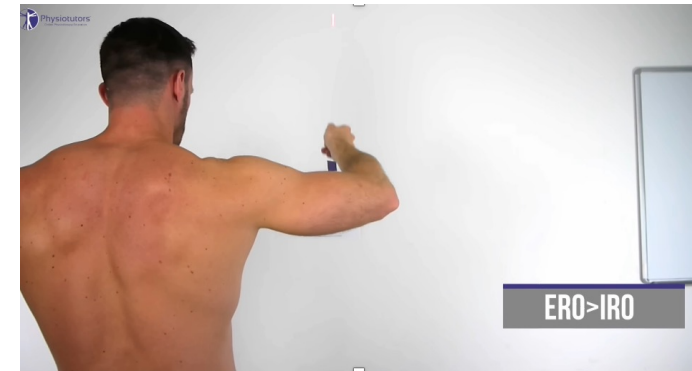
Proprioception

Shoulder proprioception: How is it measured and is it reliable?

A systematic review

Amanda L. Ager MSc, PT^{a,b,*}, Jean-Sébastien Roy PT, PhD^{a,b}, Marianne Roos M.Mus^{a,b},
Amélie Fournier Belley MSc^{a,b}, Ann Cools PT, PhD^d, Luc J. Hébert PT, PhD^{b,c}

- Evaluation de la **flexion, abduction** et **retour de la rotation externe**.
- **3 essais** les yeux ouverts et 1 essai les yeux fermés.
- Evaluation: 3x les yeux fermés (10 points pour chaque essais). Total sur 30
- Pas de différence de plus de 10%

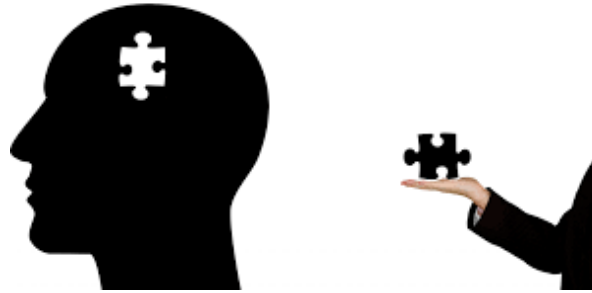


Facteurs psychologiques

Factor Structure of the Shoulder Instability Return to Sport After Injury Scale⁵⁻⁸⁻⁵

Performance Confidence, Reinjury Fear and Risk, Emotions, Rehabilitation and Surgery

Margie Olds,^{*,†} PhD, and Kate E. Webster,[†] PhD
Investigation performed at Auckland Shoulder Clinic, Auckland, New Zealand



The immediate and subsequent impact of a first-time traumatic anterior shoulder dislocation in people aged 16–40: Results from a national cohort study

M Olds¹ , R Ellis², P Parmar³ and P Kersten⁴

Conclusion: Athletes return to sports after a shoulder dislocation despite reporting high levels of fear and concern for their shoulder. High levels of fear and concern may underpin why rates of recurrent shoulder instability are so high. Four distinct elements of psychological readiness appeared to be present in this patient group.

Conclusions: Quality of life was significantly affected by an FTASD in people with recurrent shoulder instability. Across the entire cohort of people with an FTASD, kinesiphobia remained elevated in people following an FTASD.

Level of evidence: Level I prognostic study.

Echelle SIRSI

Instructions:

Merci de répondre aux questions suivantes concernant le sport principal que vous pratiquiez avant l'accident. Pour chaque question, cochez la case entre les deux extrêmes selon ce qui vous paraît correspondre le mieux à votre situation actuelle.

1. Pensez-vous pouvoir pratiquer votre sport au même niveau qu'auparavant?

Pas du tout sûr	0	1	2	3	4	5	6	7	8	9	10	Totalement sûr
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

2. Pensez-vous que vous pourriez vous blesser de nouveau l'épaule si vous repreniez le sport?

Extrêmement probable	0	1	2	3	4	5	6	7	8	9	10	Pas du tout probable
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

3. Êtes-vous inquiet à l'idée de reprendre votre sport?

Extrêmement inquiet	0	1	2	3	4	5	6	7	8	9	10	Pas du tout inquiet
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

4. Pensez-vous que votre épaule sera stable lors de votre pratique sportive ?

Pas du tout sûr	0	1	2	3	4	5	6	7	8	9	10	Totalement sûr
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

5. Pensez-vous pouvoir pratiquer votre sport sans vous soucier de votre épaule ?

Pas du tout sûr	0	1	2	3	4	5	6	7	8	9	10	Totalement sûr
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

6. Êtes-vous frustré de devoir tenir compte de votre épaule lors de votre pratique sportive ?

Extrêmement frustré	0	1	2	3	4	5	6	7	8	9	10	Pas du tout frustré
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

The Shoulder Instability-Return to Sport after Injury (SIRSI): a valid and reproducible scale to quantify psychological readiness to return to sport after traumatic shoulder instability

Antoine Gerometta^{1,2} · Shahnaz Klouche^{1,2} · Serge Herman^{1,2} · Nicolas Lefevre^{1,2} · Yoann Bohu^{1,2,3}

55-60% minimum
> ou égale à 80% retour compétition

7. Craignez-vous de vous blesser de nouveau l'épaule lors de votre pratique sportive ?

Crainte extrême	0	1	2	3	4	5	6	7	8	9	10	Aucune crainte
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

8. Pensez-vous que votre épaule peut résister aux contraintes ?

Pas du tout sûr	0	1	2	3	4	5	6	7	8	9	10	Totalement sûr
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

9. Avez-vous peur de vous reblesser accidentellement l'épaule lors de votre pratique sportive ?

Très peur	0	1	2	3	4	5	6	7	8	9	10	Pas du tout peur
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

10. Est-ce que l'idée de devoir éventuellement vous faire réopérer ou rééduquer vous empêche de pratiquer votre sport ?

Tout le temps	0	1	2	3	4	5	6	7	8	9	10	A aucun moment
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

11. Êtes-vous confiant en votre capacité à bien pratiquer votre sport ?

Pas du tout confiant	0	1	2	3	4	5	6	7	8	9	10	Totalement confiant
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

12. Vous sentez-vous détendu à l'idée de pratiquer votre sport?

Pas du tout détendu	0	1	2	3	4	5	6	7	8	9	10	Totalement détendu
	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Score SIRSI (Total x 100) / 120 = ____%

Prise en charge après chirurgie



Latarjet Procedure for the Treatment of Anterior Glenohumeral Instability in the Athlete – Key Considerations for Rehabilitation

Helen Bradley, PT, MSc, SCS¹, Lucca Lacheta, MD^{2 a}, Brandon T. Goldenberg, MD³, Samuel I. Rosenberg, BA³, Matthew T. Provencher, MD^{4 b}, Peter J. Millett, MD, MSc^{4 c}

**THE AMERICAN SOCIETY OF SHOULDER AND ELBOW THERAPISTS' CONSENSUS REHABILITATION
GUIDELINE FOR ARTHROSCOPIC ANTERIOR CAPSULOLABRAL REPAIR OF THE SHOULDER**



Bankart

Semaines 0-6

Phase 1
Protection
PROM contrôlé

Elévation antérieur passive
90° à la semaine 3
135° à la semaine 6

Rotation externe passive à 20°
abduction
10° à 30° à la semaine 3
35° à 50° à la semaine 6

Elévation antérieur active
Non applicable à la semaine 3
115° à la semaine 6

Rotation externe passive à 90°
abduction
Contre-indication à la semaine 3
45° à la semaine 6

Semaines 6 à 12

Phase 2
Amplitude
Renforcement
progressif

Elévation antérieur passive
155° à la semaine 9
complète à la semaine 12

Rotation externe passive à 20°
abduction
50° à 65° à la semaine 9
complète à la semaine 12

Elévation antérieur active
145° à la semaine 9
complète à la semaine 12

Rotation externe passive à 90°
abduction
75° à la semaine 9
complète à la semaine 12

Semaines 12 à 24

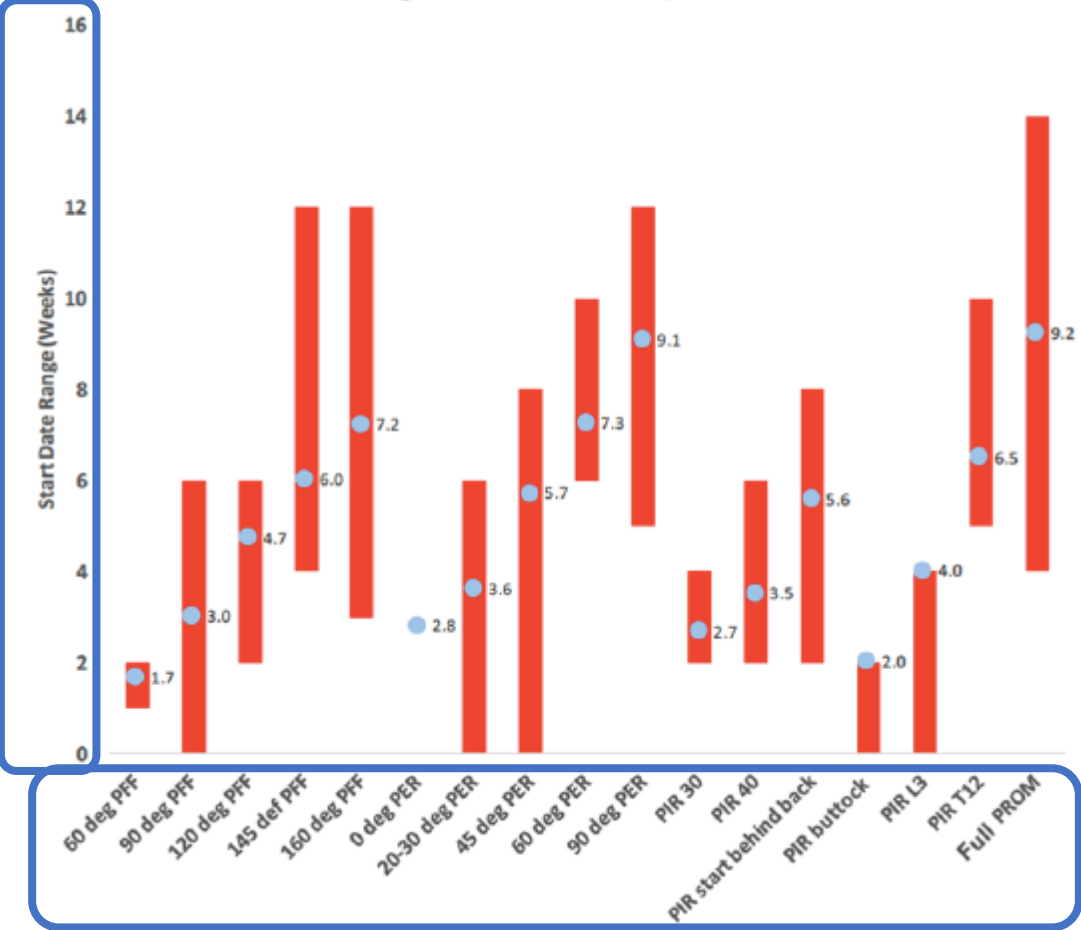
Phase 3
Renforcement et
RTS

Renforcement progressif
force, endurance, puissance
en fonction des demandes
spécifiques du patient.

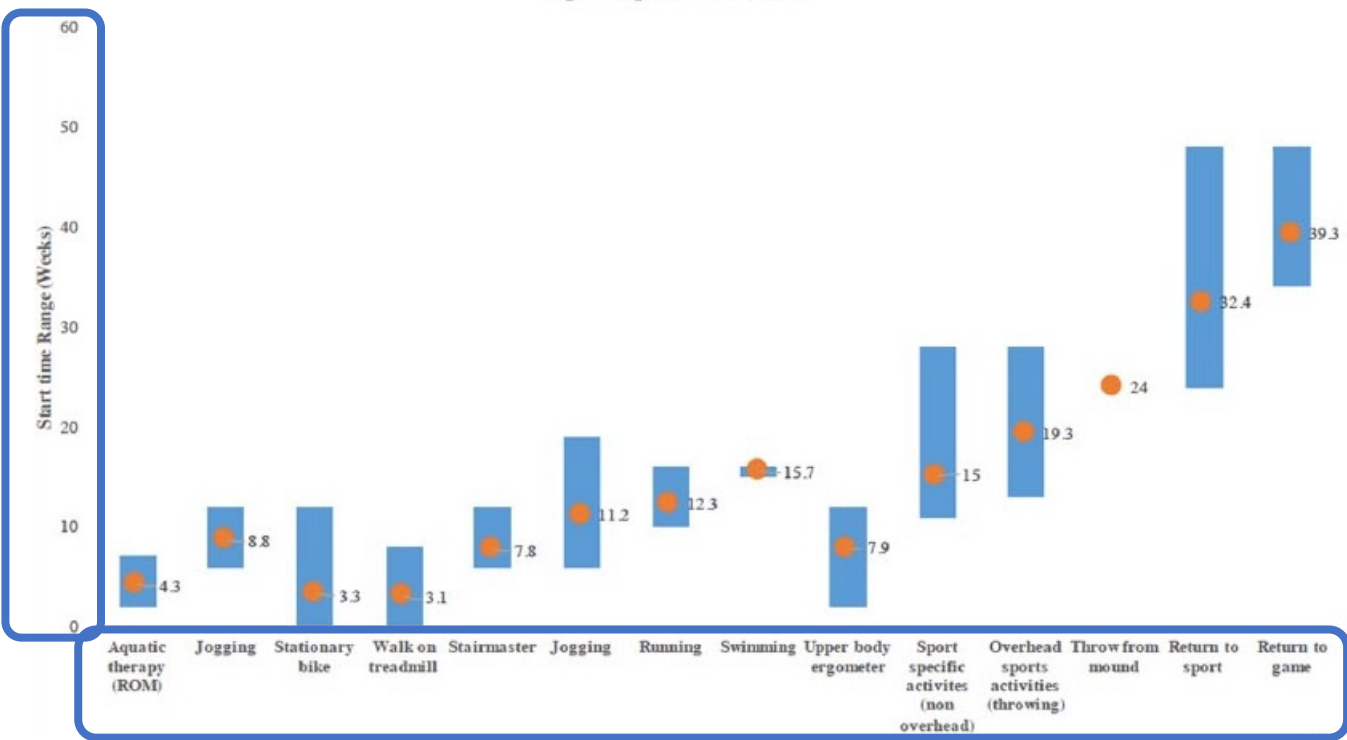
Physical Therapy Protocols for Arthroscopic Bankart Repair

Steven F. DeFroda, MD, MEng,*† Nabil Mehta, BSE,† and Brett D. Owens, MD†

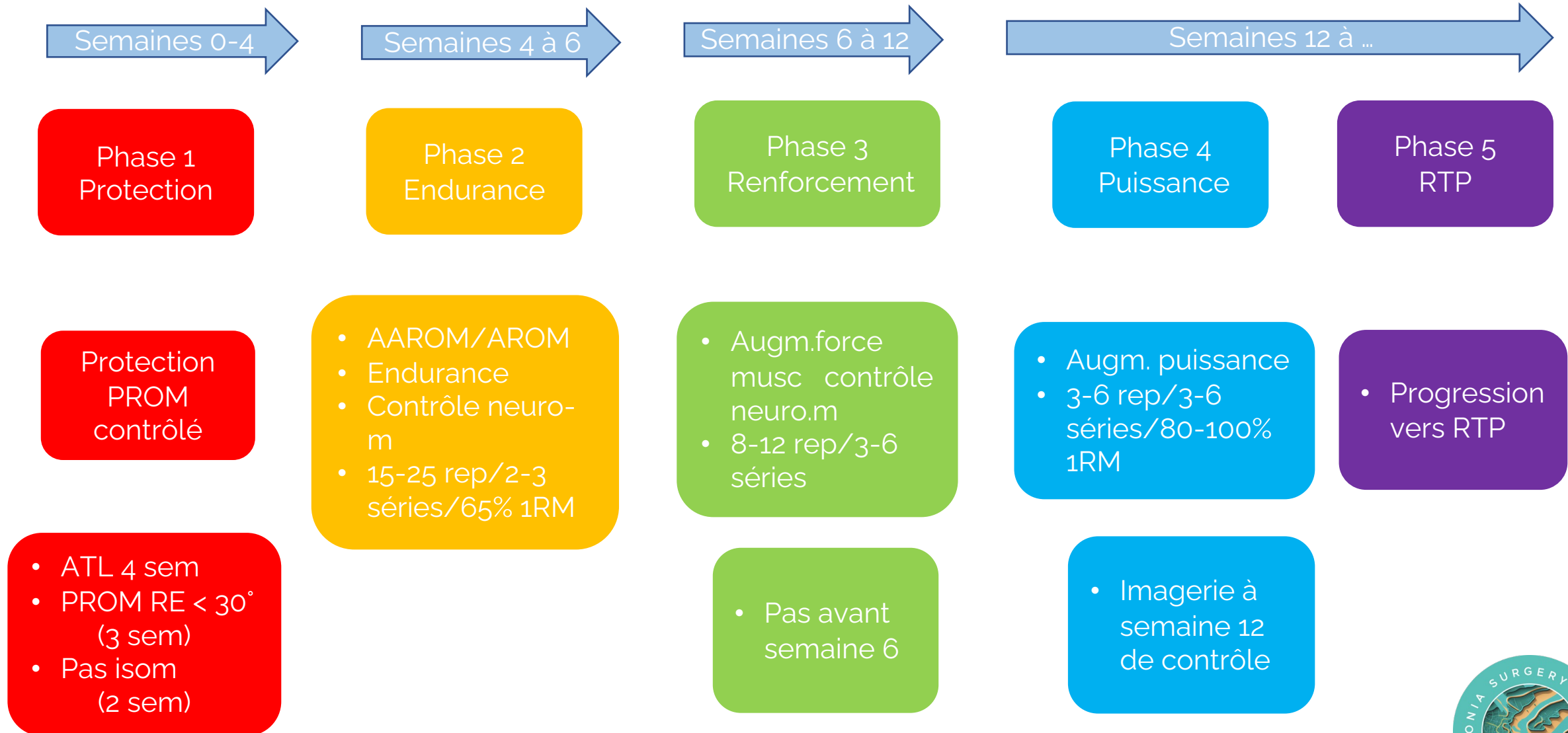
Range of Motion Start Dates/Goals



Sport Specific Activities



Latarjet



Critères de progression

Phase de protection

1. Douleur < 3/10 au repos
2. QuickDash < 60%
3. Amplitudes passives: EA:120°, Abd 90°, RE 30°
4. Réaliser rétraction/protraction, dépression/ élévation scapulaire actives

Phase endurance

1. Douleur < 3/10 en actif
2. Quick Dash < 40%
3. Amplitudes actives: EA 120°, Abd 120°, RE 45°
4. Protocole de fatigue: maintien isométrique ou mouvements actifs répétés 20 reps en scaption 90° et Abd 90° + RE coucher lat.

Phase renforcement

1. Absence d'appréhension
2. Quick Dash < 20%
3. Amplitudes actives: 90% controlat
4. HHD > 80% controlat
5. Joint Angular Replication test 90°
6. « Athlete Fear Avoidance Questionnaire »

Phase puissance

1. CKQUEST
2. UE Y Balance Test
3. Single Arm Seated Shot put test
4. Modified Push up test
5. SET
6. ULRT

Phase RTP

1. Drills spécifiques du sport souhaité
2. Entraînements & reprise de l'intensité progressive des matches
3. Entraînement progressif des lancers (si nécessaire)

Development and Validation of the Athlete Fear Avoidance Questionnaire

Geoffrey Dover, PhD, CAT(C), ATC; Vanessa Amar, MSc, CAT(C)

Department of Exercise Science, Concordia University, Montreal, Quebec, Canada

Athletic Fear Avoidance Questionnaire (AFAQ)

Instructions: We are interested in your feelings or thoughts when in pain as a result of a sport injury. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are in pain due to a sports injury.

Rating	1	2	3	4	5
Meaning	Not at all	To a slight degree	To a moderate degree	To a great degree	Completely agree

ATHLETE FEAR AVOIDANCE QUESTIONNAIRE BENCHMARKS

0-16	Low avoidance
17-33	Moderate avoidance
34-50	High avoidance

Statement	Rating
1. I will never be able to play as I did before my injury	
2. I am worried about my role with the team changing	
3. I am worried about what other people will think of me if I don't perform at the same level	
4. I am not sure what my injury is	
5. I believe that my current injury has jeopardized my future athletic abilities	
6. I am not comfortable going back to play until I am 100%	
7. People don't understand how serious my injury is	
8. I don't know if I am ready to play	
9. I worry if I go back to play too soon I will make my injury worse	
10. When my pain is intense, I worry that my injury is a very serious one	



Cas clinique



Opération Latarjet gauche 15 mai 2024
Championnat du monde karaté Japon fin octobre 2024

Semaines 6 à 12

Phase 3
Renforcement



Semaines 12 à ...

Phase 4
Puissance

Phase 5
RTP



Progressing rehabilitation after injury: consider the 'control-chaos continuum'

Matt Taberner,^{1,2} Tom Allen,³ Daniel Dylan Cohen⁴

Semaines 12 à ...

Phase 4
Puissance

Phase 5
RTP



Semaines 12 à ...

Phase 4
Puissance

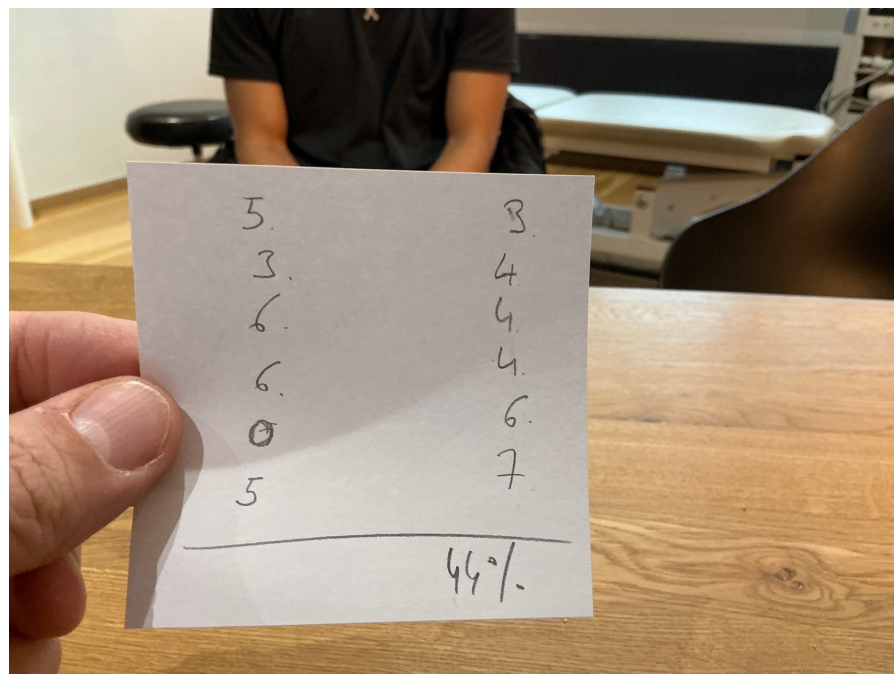
Phase 5
RTP







80 %



Echelle SIRSI

Instructions:
Merci de répondre aux questions suivantes concernant le sport principal que vous pratiquiez avant l'accident. Pour chaque question, cochez la case entre les deux extrêmes selon ce qui vous paraît correspondre le mieux à votre situation actuelle.

1. Pensez-vous pouvoir pratiquer votre sport au même niveau qu'auparavant?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totallement sûr

2. Pensez-vous que vous pourriez vous blesser de nouveau l'épaule si vous repreniez le sport?

Extrêmement probable 0 1 2 3 4 5 6 7 8 9 10 Pas du tout probable

3. Êtes-vous inquiet à l'idée de reprendre votre sport?

Extrêmement inquiet 0 1 2 3 4 5 6 7 8 9 10 Pas du tout inquiet

4. Pensez-vous que votre épaule sera stable lors de votre pratique sportive?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totallement sûr

5. Pensez-vous pouvoir pratiquer votre sport sans vous soucier de votre épaule?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totallement sûr

6. Êtes-vous frustré de devoir tenir compte de votre épaule lors de votre pratique sportive?

Extrêmement frustré 0 1 2 3 4 5 6 7 8 9 10 Pas du tout frustré

7. Craignez-vous de vous blesser de nouveau l'épaule lors de votre pratique sportive?

Crainte extrême 0 1 2 3 4 5 6 7 8 9 10 Aucune crainte

8. Pensez-vous que votre épaule peut résister aux contraintes?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totallement sûr

9. Avez-vous peur de vous reblesser accidentellement l'épaule lors de votre pratique sportive?

Très peur 0 1 2 3 4 5 6 7 8 9 10 Pas du tout peur

10. Est-ce que l'idée de devoir éventuellement vous faire réopérer ou rééduquer vous empêche de pratiquer votre sport?

Tout le temps 0 1 2 3 4 5 6 7 8 9 10 A aucun moment

11. Êtes-vous confiant en votre capacité à bien pratiquer votre sport?

Pas du tout confiant 0 1 2 3 4 5 6 7 8 9 10 Totallement confiant

12. Vous sentez-vous détendu à l'idée de pratiquer votre sport?

Pas du tout détendu 0 1 2 3 4 5 6 7 8 9 10 Totallement détendu

Score SIRSI (Total x 100) / 120 = 44 %



Retour aux sports

Are Patients Who Undergo the Latarjet Procedure Ready to Return to Play at 6 Months?

A Multicenter Orthopaedic Outcomes Network (MOON)
Shoulder Group Cohort Study

CONCLUSION

A large percentage of athletes, 55%, fail to return to full baseline strength and ROM 6 months after Latarjet. Greater preoperative stiffness and subjective disability are risk factors for failure to meet ROM or strength RTP criteria. Given that many athletes return to sport well before 6 months despite not having return of full strength and ROM, RTP criteria after Latarjet should be transitioned away from strict chronological measures and toward sport- and position-specific, functionally based metrics that consider objective and subjective findings.

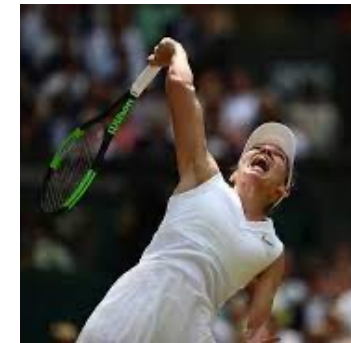
The text "6 months" is written in a gold, cursive, glittery font on a white background.The text "55%" is displayed in a large, 3D, red and white font with a shadow effect.

Retour aux sports

Durée des symptômes > 1 an
Raideur pré-opératoire TROM > 20°
Limitations subjectives (ASES et WOSI)



49% RTP au niveau avant opération



95% RTP
81% même niveau
65% sports de lancer

Retour aux sports

Early return to baseline range of motion and strength after anterior shoulder instability surgery: a Multicenter Orthopaedic Outcomes Network (MOON) shoulder group cohort study



Joseph A. Buckwalter V, MD, PhD^{a,*}, Brian R. Wolf, MD, MS^a, Natalie Glass, PhD^a, Matt Bollier, MD^a, MOON Shoulder Group, John E. Kuhn, MD, MS^b, Carolyn M. Hettrich, MD, MPH^c

À 4 à 8 mois

76%

ROM

98%

FORCE

75%

ROM
&
FORCE



Nombre de luxation
Hyperlaxité (Beighton)



L'épaule gelée

Quelques chiffres



2 à 5% de la population



8% hommes
10% femmes



1 à 3
ans

An international consensus on the etiology, risk factors, diagnosis and Management for individuals with Frozen Shoulder: a Delphi Study

Paul Salamh, Brent Stoner, Nathaniel Ruley, Huiling Zhu, Marcus Bateman, Rachel Chester, Liesbet Da Baets, Jo Gibson, Luise Hollmann, Martin Kelley, Jeremy Lewis, Philip McClure, Karen McCreesh, Michel Gcam Mertens, Lori Michener, Amee L. Seitz, Filip Struyf, Joseph Zuckerman & William King

Likelihood of needing to rule out all other differential diagnoses before diagnosing frozen shoulder

86%

The following factors confound the diagnosis of frozen shoulder

Muscle guarding
Osteoarthritis
Poor clinical reasoning
Rotator cuff tear
Bursitis

93%

93%

85%

79%

92% (NO)

Classifications

Epaule gelée
idiopathique

Epaule gelée
secondaire

Systémique

Extrinsèque

Iatrogène

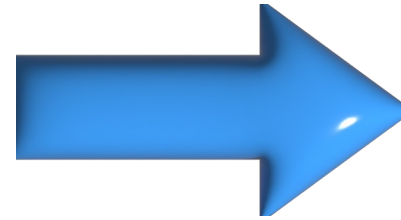
Classifications

Epaule gelée secondaire

Etiology

The following are associated with secondary frozen shoulder

- Diabetes mellitus
- Trauma
- Shoulder arthroscopy
- Thyroid disease
- Prolonged immobilization
- Adrenocorticotrophic hormone deficiency
- Metabolic syndrome
- Connective tissue disorders
- Hyperlipidemia



Incidence de 5 à 11%
après chirurgie

Tableau clinique

The following are signs and symptoms associated with frozen shoulder

Shoulder pain at night

Increase in pain with rapid unguarded movement

Discomfort lying on the affected shoulder

Shoulder movement causes pain

Age above 35 years old

Global loss of active and passive range of motion

Pain at end range in all directions

Global loss of passive range of motion

Decreased passive external rotation greater compared to other passive range of motion directions

Pain located in the upper arm (deltoid insertion)

Reduced external rotation with increasing abduction

Minimal pain on resisted testing (external rotation and abduction)

Certainty in clinical judgment regarding the diagnosis of frozen shoulder



Tableau clinique



Contents lists available at ScienceDirect

Musculoskeletal Science and Practice

journal homepage: www.elsevier.com/locate/msksp



Does muscle guarding play a role in range of motion loss in patients with frozen shoulder?



L. Hollmann^a, M. Halaki^b, S.J. Kamper^{c,d}, M. Haber^e, K.A. Ginn^{f,*}

Table 1
Demographic and outcome measurement data for all participants.

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
age	64	53	51	59	57
gender	male	female	female	male	female
side affected	dominant	non-dominant	non-dominant	non-dominant	dominant
duration of symptoms (months)	9	18	6	6	30
pain & functional limitation (SPADI score)	67	87	79	67	76
passive abduction ROM					
pre anaesthesia	47°	70°	53°	90°	63°
post anaesthesia	152°	153°	164°	144°	116°
ROM increase (%)	105° (223%)	83° (119%)	111° (209%)	54° (60%)	53° (84%)
passive external rotation ROM					
pre anaesthesia	26.3°	28.3°	17.3°	68.0°	17.0°
post anaesthesia	67.7°	48.3°	32.7°	69.0°	20.0°
ROM increase (%)	41.4° (156%)	20° (71%)	15.4° (89%)	1.0° (< 1%)	3.0° (18%)

Findings: Immediately following anaesthesia to eliminate the influence of pain and muscle contraction on shoulder function, passive shoulder abduction and external rotation ROM increased by approximately 150%–300% in some patients with the classical clinical features of idiopathic frozen shoulder.

Implications: In patients diagnosed with frozen shoulder large percentage increases in shoulder ROM following anaesthesia indicate that muscle guarding, and not capsular contracture, may be the major contributing factor to movement restriction in some of these patients.

Caution: Increases in passive shoulder ROM following anaesthesia have only been demonstrated in a very small number of frozen shoulder patients. Further studies concentrating on glenohumeral joint ROM in a larger group of frozen shoulder patients is required to confirm the veracity of these findings.



Prise en charge

Opinions variées (rééducation ou pas)

Experts pensent que l'évolution de la
récupération ne sera pas identique
20 à 50% gardent une
raideur /douleur



Prise en charge

TABLE 1

IRRITABILITY CLASSIFICATION

High Irritability	Moderate Irritability	Low Irritability
High pain ($\geq 7/10$)	Moderate pain (4-6/10)	Low pain ($\leq 3/10$)
Consistent night or resting pain	Intermittent night or resting pain	No resting or night pain
High disability on DASH, ASES, PSS	Moderate disability on DASH, ASES, PSS	Low disability on DASH, ASES, PSS
Pain prior to end ROM	Pain at end ROM	Minimal pain at end ROM with overpressure
AROM less than PROM, secondary to pain	AROM similar to PROM	AROM same as PROM

Abbreviations: AAROM, active assisted range of motion; AROM, active range of motion; ASES, American Shoulder and Elbow Surgeons Score; DASH, Disabilities of the Arm, Shoulder and Hand Questionnaire; PROM, passive range of motion; PSS, Penn Shoulder Score; ROM, range of motion.



Prise en charge

Douleur > Raideur

Raideur > douleur

Prise en charge

Douleur > Raideur

Raideur > douleur

Capacité à **dormir** la nuit
Douleur ou **raideur**
comme principal
symptôme
Symptômes évoluant
positivement ou
négativement depuis **3**
semaines



Prise en charge

Douleur > Raideur

The following Management are effective in the EARLY phase(s) of frozen shoulder (painful and inflamed)

Injection (corticosteroid)	79%
Information or advice	100%
Reassurance	100%
Massage	100% (NO)
Surgery	86% (NO)
Immobilization	100% (NO)
Heat	100% (NO)
Ice	100% (NO)
Electrical stimulation	100% (NO)
Ultrasound	100% (NO)
Hydrodilatation	79% (NO)
Manual therapy (including mobilizations)	93% (NO)

Prise en charge

Raideur > douleur

The following Management are effective in the LATER phase(s) of frozen shoulder (stiff)

Surgery	85%
Hydrodilatation	85%
Manual therapy (including mobilizations)	85%
Education and reassurance	92%
Massage	79% (NO)
Acupuncture	79% (NO)
Immobilization	100% (NO)
Ice	86% (NO)
Electrical stimulation	100% (NO)
Ultrasound	100% (NO)

Prise en charge

The following Management are effective in the LATER phase(s) of frozen shoulder (stiff)

Surgery

Hydrodilatation

Manual therapy (including mobilizations)

Education and reassurance

Techniques thérapie manuelle

- glide ant
- glide post
- glide inf
- mix des 3
- non spécifique

Dosage thérapie manuelle

- 15x 1min
- 5x 30 sec
- 3x 15 rep
- grade de la mob 1 -2 /3-4

Dosage exercices

- 10x 20 sec de stretching pendant 20 min
(en fonction des directions)
- 10x 10 sec dans toutes les directions
- exercices actif aidé/ actif et contre résistance

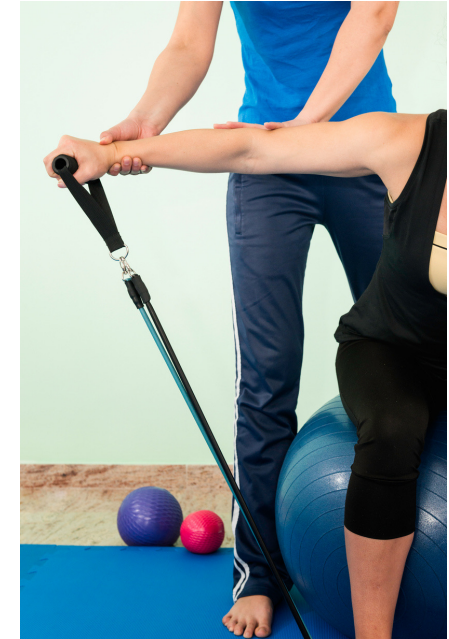


Prise en charge



Conclusions

Non-significant findings with low to very low quality of evidence were found across meta-analyses, preventing seamless transition of research evidence to clinical practice. However, many individual studies demonstrated positive results, suggesting that further research may support the use of MT and exercise in the management of patients with AC. The lack of consistency in study designs, manual therapy techniques, dosing parameters, and duration of care make it difficult to make strong recommendations regarding the optimal dosage of physical therapy for individuals with AC.



Prise en charge

The following biophysical factors impact the *outcomes of Management* among those with frozen shoulder

- History of diabetes
- History of thyroid disease
- History of ipsilateral shoulder pain
- History of contralateral shoulder pain
- Parkinson's disease
- Metabolic syndrome
- Autoimmune disease
- Severity of complaint

The following psychosocial factors impact the *outcomes of Management* among individuals with frozen shoulder

- History of depression
- History of anxiety
- Fear-avoidance behavior
- Cultural views on health condition
- Cognitive impairment
- Healthcare experience
- Self-efficacy
- Mental stress
- Socioeconomic status

Prise en charge

Mobilisation selon le paradoxe de Codman



Mobilisation articulaire en « endrange »



Mobilization with Movement (MWM)



Stretching (Sleeper stretch & Cross body Stretch)



Prise en charge

Mobilisation selon le paradoxe de Codman



Prise en charge

Mobilization with Movement (MWM)



Prise en charge

Mobilisation articulaire en « end range »



Take Home Message



Facteurs de risque et retour aux sports



Facteurs de risques

Reduced glenohumeral rotation, external rotation weakness and scapular dyskinesis are risk factors for shoulder injuries among elite male handball players: a prospective cohort study

Benjamin Clarsen, Roald Bahr, Stig Haugsboe Andersson, Rikke Munk, Grethe Myklebust

Handball load and shoulder injury rate: a 31-week cohort study of 679 elite youth handball players

M Møller,¹ R O Nielsen,¹ J Attermann,² N Wedderkopp,³ M Lind,⁴ H Sørensen,¹ G Myklebust⁵

Original Research

Reduced shoulder strength and change in range of motion are risk factors for shoulder injury in water polo players

Andrea Hams^{a, b, d, *}, Kerrie Evans^{c, d, e}, Roger Adams^a, Gordon Waddington^a, Jeremy Witchalls^a



Risk factors for, and prevention of, shoulder injuries in overhead sports: a systematic review with best-evidence synthesis

Martin Asker,^{1,2} Hannah L Brooke,³ Markus Waldén,^{4,5,6} Ulrika Tranaeus,^{1,7} Fredrik Johansson,^{1,2} Eva Skillgate,^{1,2} Lena W Holm^{1,3}

Correlation of Glenohumeral Internal Rotation Deficit and Total Rotational Motion to Shoulder Injuries in Professional Baseball Pitchers

Kevin E. Wilk,^{*,†‡} DPT, PT, Leonard C. Macrina,^{†‡} MSPT, SCS, CSCS, Glenn S. Fleisig,[‡] PhD, Ronald Porterfield,[§] MS, ATC, Charles D. Simpson II,[†] DPT, CSCS, Paul Harker,[§] ATC, Nick Paparesta,[§] ATC, and James R. Andrews,[‡] MD
Investigation performed at Champion Sports Medicine, American Sports Medicine Institute, Birmingham, Alabama. Data collection conducted at the training facility of the Tampa Bay Rays baseball team

Risk Factors for Baseball-Related Arm Injuries

A Systematic Review

Cristine E. Agresta,^{*,†} MPT, PhD, Kevin Krieg,[†] MS, and Michael T. Freehill,[‡] MD
Investigation performed at the Michigan Performance Research Laboratory, School of Kinesiology, University of Michigan, Ann Arbor, Michigan, USA



Facteurs de risques

Risk factors for, and prevention of, shoulder injuries in overhead sports: a systematic review with best-evidence synthesis

Martin Asker,^{1,2} Hannah L Brooke,³ Markus Waldén,^{4,5,6} Ulrika Tranaeus,^{1,7} Fredrik Johansson,^{1,2} Eva Skillgate,^{1,2} Lena W Holm^{1,3}

CONCLUSIONS

All investigated potential risk factors for shoulder injury in overhead sports had limited evidence, and most were non-modifiable (eg, sex). There is also limited evidence for the effect of shoulder injury prevention measures in overhead sports.

Risk Factors of Overuse Shoulder Injuries in Overhead Athletes: A Systematic Review

Camille Tooth, PT,^{*††} Amandine Gofflot, PT,[‡] Cédric Schwartz, PhD,[†] Jean-Louis Croisier, PT, PhD,^{††} Charlotte Beaudart, PhD,[§] Olivier Bruyère, PhD,[§] and Bénédicte Forthomme, PT, PhD^{††}

Conclusion: Range of motion, rotator cuff muscle weakness, and training load are important modifiable factors associated with shoulder injuries. Scapular dysfunction may also have influence. The preventive approach for shoulder injury should focus on these factors.

Risk factors and prevention strategies for shoulder injuries in overhead sports: an updated systematic review

Matthias Wilhelm Hoppe^{1*}, Joana Brochhagen¹, Thomas Tischer^{2,3}, Knut Beitzel⁴, Romain Seil⁵ and Casper Grim^{6,7}

Conclusion

There is moderate evidence for two non-modifiable (playing position, gender) and three modifiable factors (shoulder rotational strength, scapular dyskinesia, shoulder prevention programme) being associated with the shoulder injury risk in overhead sports. From a practical point of view, these factors can be used as a framework to design injury screening tests and prevention strategies that should then be adapted for each overhead sport and subpopulation. However, more research is needed to evaluate further risk factors and shoulder prevention strategies.



Facteurs de risques

Importance de la charge d'entraînement?

CONCLUSION

Our findings demonstrated that the shoulder injury rate in elite youth handball players was nearly twice as high in the week following a 60% or greater increase in handball load when compared with a decrease or a small-to-moderate increase in handball load <20%.

In addition, the findings showed that an effect of a moderate increase between 20% and 60% in handball load was exacerbated by the presence of reduced external rotational strength or scapular dyskinesis and that reduced shoulder external rotational strength also exacerbated the effect of large increases in handball load above 60%. Finally, we found 2.5 times higher shoulder injury incidence rate among 14–18-year-old handball players than previously reported.



60% X2 la semaine suivante

Une faiblesse des RL accentue le risque de blessure.



20% à 60%

Dyskinésie scapulaire ou **faiblesse des RL** accentue le risque de blessure.

Facteurs de risques

Charge



Charge interne
Charge physique vécue
par l'athlète



Charge externe
quantification du travail

Une quantité de mesures subjectives et objectives existent pour monitorer les deux charges.
(ex. volume d'entraînement/ exposition/ durée/ distance, rating of perceived exertion (RPE),
rythme cardiaque, prise de sang, questionnaire)

Facteurs de risques

TABLE 3

MEASURES TO MONITOR WORKLOAD IN DIFFERENT ATHLETE POPULATIONS

Example of Monitoring Workload	Youth Athletes	Adult Athletes ^a	Professional Athletes ^b
Overhead sports	• Shoulder-specific RPE • Pitch counts or serve counts in baseball, softball, cricket, and tennis • Number of laps in swimming/water polo • Number of training sessions and matches (or hours) played	• Session RPE • Shoulder-specific RPE • Strength assessment (eg, endurance and power testing using HHD or other equipment) • Wellness questions or questionnaires (eg, sleep, stress, recovery)	• GPS tracking • Number of strokes in swimming/water polo • Clinical recovery measurements (eg, blood sampling) • Strength assessment (eg, rate of force development analysis) • Pitch/throw velocity
Collision sports	• Shoulder-specific RPE • Number of training sessions and matches (or hours) in team sports • Number of tackles/checks per training in rugby, ice hockey, and lacrosse	• Session RPE • Shoulder-specific soreness NRS • Wellness questions or questionnaires (eg, sleep, stress, recovery)	• GPS tracking • Number of tackles • Clinical recovery measurements (eg, blood sampling) • Strength assessment • Pitch/throw velocity

Abbreviations: GPS, global positioning system; HHD, handheld dynamometry; NRS, numeric rating scale; RPE, rate of perceived exertion.

^a*In addition to youth athletes.*

^b*In addition to adult athletes.*

Facteurs de risques

Fatigue



La fatigue est un autre aspect crucial à surveiller.

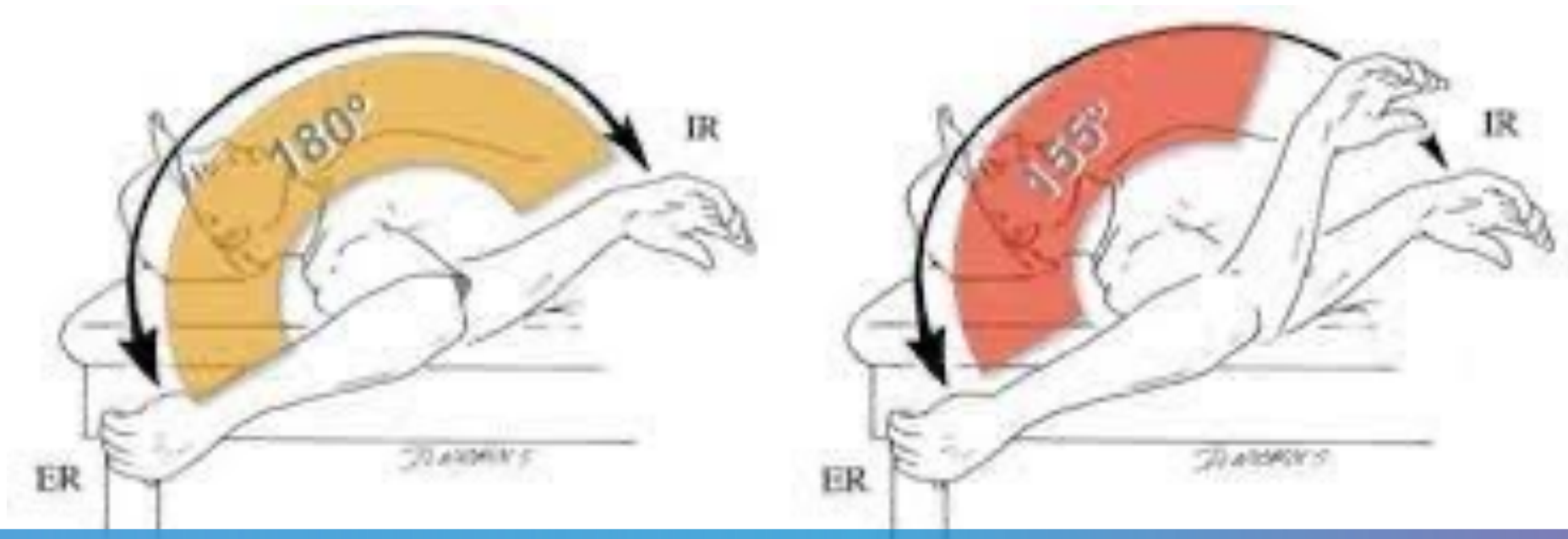
Elle peut être définie comme la diminution des fonctions psychologiques et physiologiques de base de l'athlète, qui a un impact négatif significatif sur la performance et entraîne un risque accru de blessure pour les athlètes.

Il est important de dépister la fatigue (mentale, physique et émotionnelle) en réponse aux charges d'entraînement, afin de minimiser les blessures.

Facteurs de risques

Gleno-humeral Internal Rotation Deficit

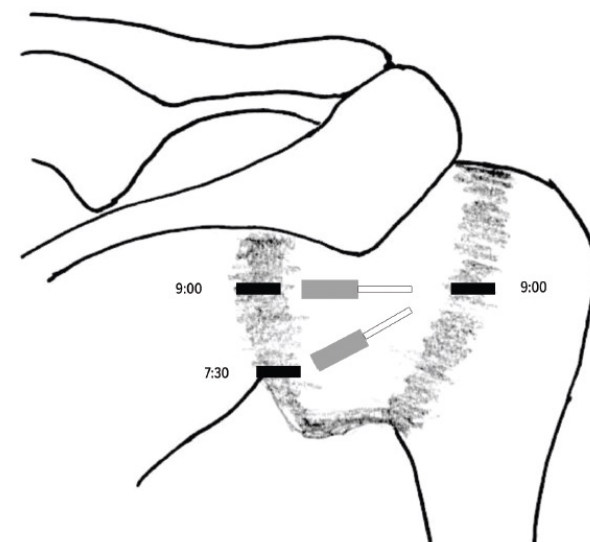
Deficit de la Rotation Interne Gléno-humérale



Facteurs de risques

G.I.R.D : Définition

- Raideur de la partie postérieure de l'épaule.
- Une des adaptations les plus courante.
- Principalement du côté dominant dans les sports de lancer.
- Cliniquement, diminution de l'adduction horizontale de la gléno-humérale et de la mobilité en rotation interne.
- Le GIRD peut entraîner des pathologies telles que tendinopathie de la coiffe, atteinte du labrum,..)



Facteurs de risques

1

Mécanismes d'apparition

Adaptation capsulo-musculaire

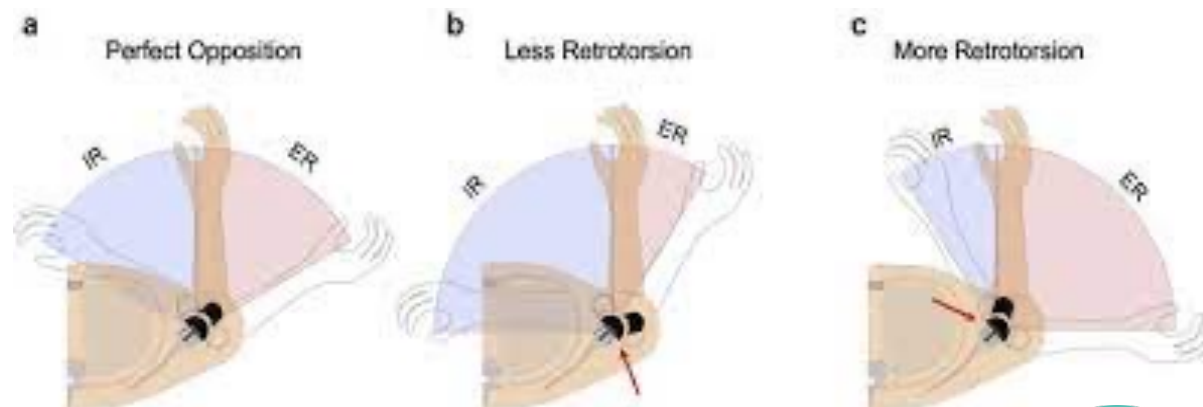
Résultats d'une raideur capsulaire et d'une contracture musculaire suite aux phases de décélération répétées lors des lancers (microtrauma répétés en excentriques).



2

Adaptation osseuse

Augmentation de la retro-torsion de 10° (9 -12°) de la tête humérale comparée au côté opposé non-dominant.



Facteurs de risques

- Changements structuraux normaux au niveau de l'épaule dominante.

(ex: augmentation de la rétro-torsion de la tête humérale).

- L'augmentation de cette rétro-torsion entraîne une augmentation de la mobilité en RL et une diminution de la RM du côté dominant.
- Le GIRD n'est donc pas toujours pathologique!



Facteurs de risques

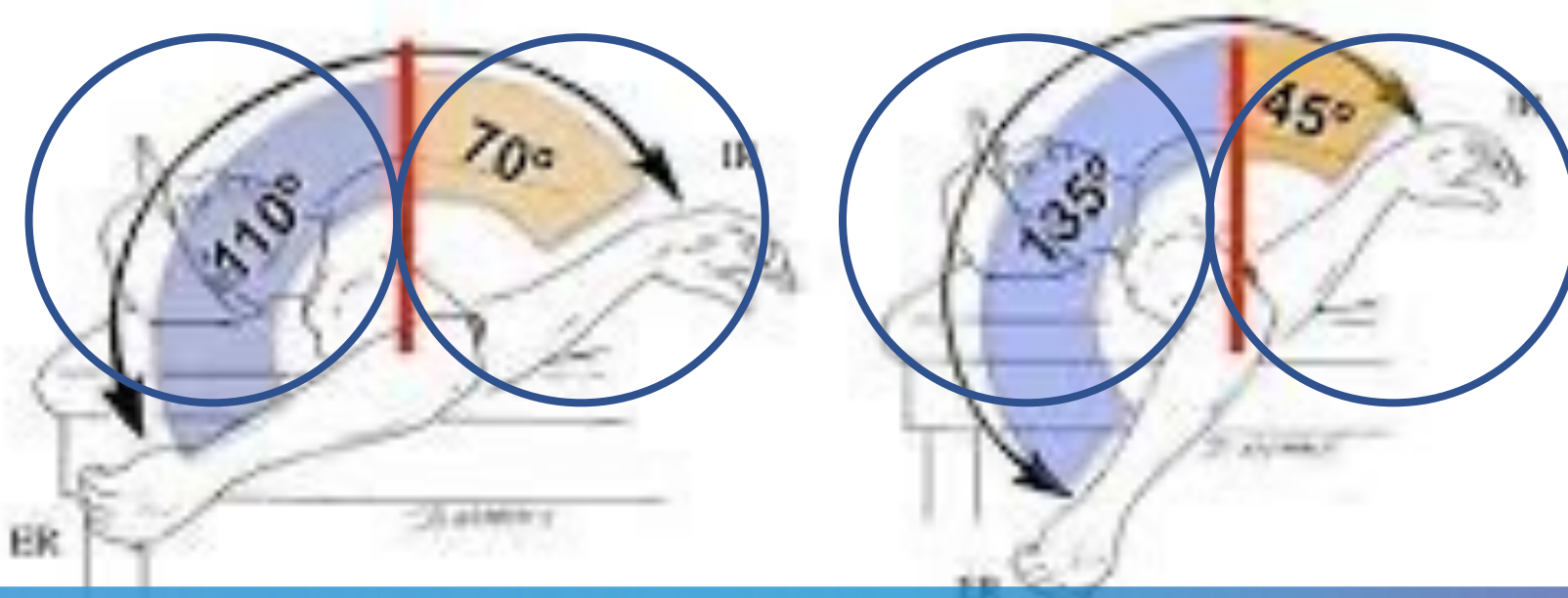


GIRD = perte de plus de 20° de la RI comparée au côté opposé non dominant.

Arc total = symétrique par rapport au côté opposé non dominant.



Si diminution de l'arc total de plus de 5° par rapport au côté opposé non dominant
=> problématique



Facteurs de risques

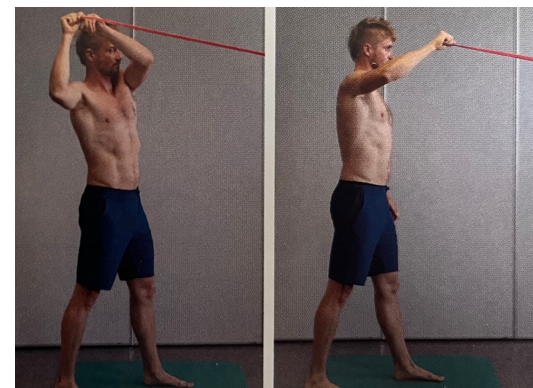
Stretching



Prise en charge



Renforcement musculaire



Absence de consensus sur la gestion du GIRD pathologique par une prise en charge passive ou active.

Stretching augmente non seulement les amplitudes articulaires mais diminue également la douleur.

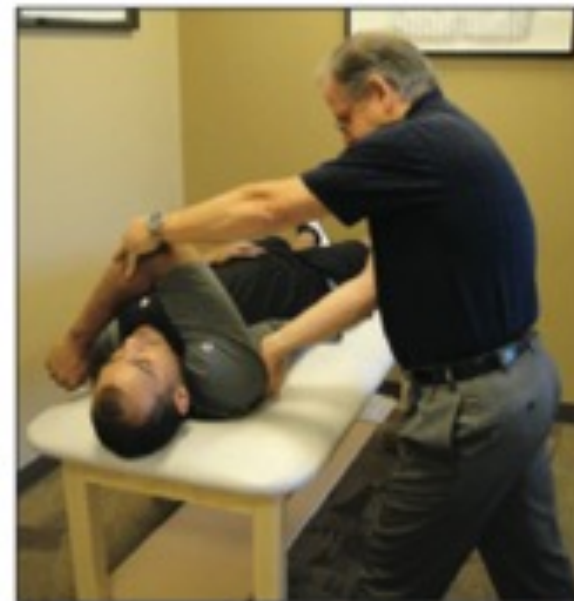
Stretching augmente la distance acromio-humérale (entraînant une diminution d'un « conflit sous-acromial »?)

Facteurs de risques

Stretching



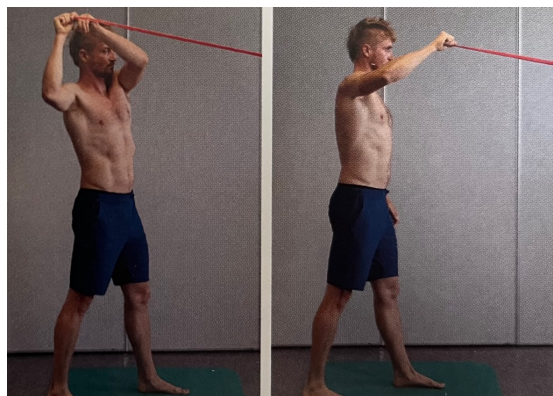
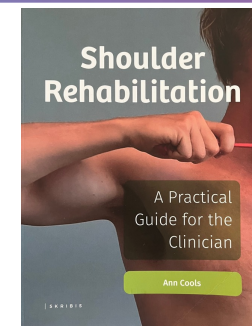
Sleeper's stretch coucher latéral
Sleeper's stretch coucher dorsal
Sleeper's stretch coucher dorsal + contracté/relaché
Sleeper's stretch & glissement inférieur



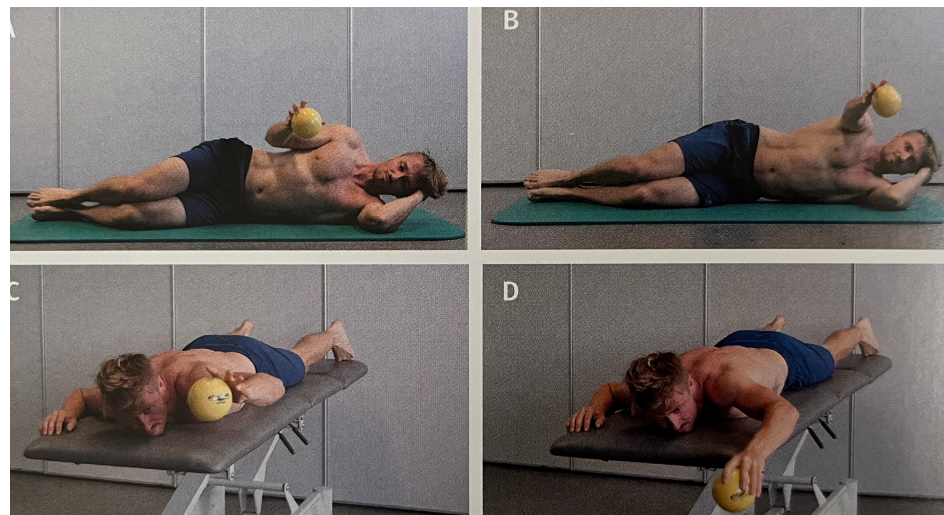
Cross body stretch
Reverse cross body stretch
cross body stretch inversé + contracté/relaché

Facteurs de risques

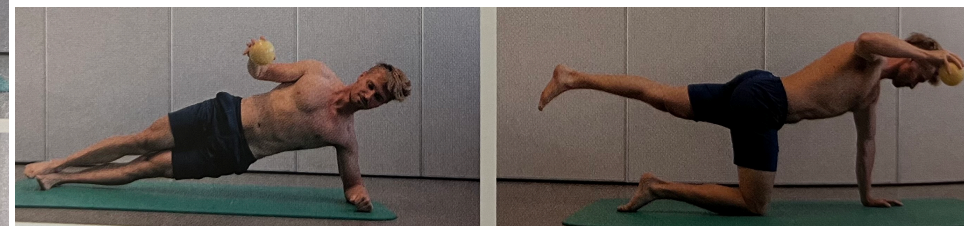
Entraînement excentrique pour travailler les décélérations



Excentrique en RL



Pliométrie en RL



Pliométrie en RL + side plank ou position pompe

Facteurs de risques

Dyskinésie scapulaire

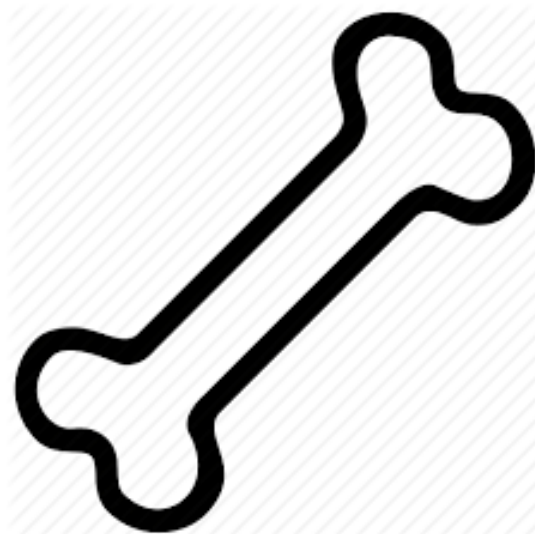


Facteurs de risques

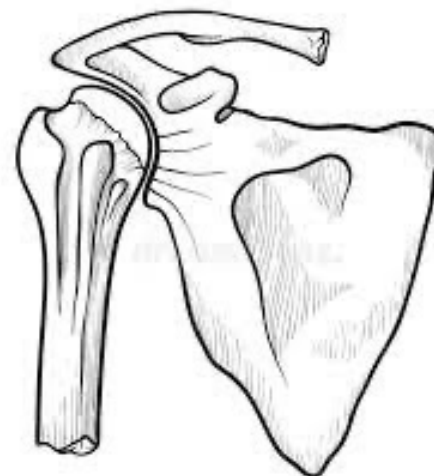
Définition



Radiculopathie cervicale
Atteinte nerf accessoire
Atteinte nerf long thoracique



Cyphose thoracique
Fracture clavicule



Instabilité AC
Arthrose AC
Instabilité GH



Raideur petit pectoral
Raideur Biceps
GIRD
Troubles d'activation
(dentelé antérieur/trapèze)



Clinical implications of scapular dyskinesis in shoulder injury: the 2013 consensus statement from the 'scapular summit'

W Ben Kibler,¹ Paula M Ludewig,² Phil W McClure,³ Lori A Michener,⁴ Klaus Bak,⁵ Aaron D Sciascia¹

Facteurs de risques

PAULA M. LUDEWIG, PT, PhD¹ • JONATHAN F. REYNOLDS, PT, PhD²

The Association of Scapular Kinematics and Glenohumeral Joint Pathologies

TABLE 3

PROPOSED BIOMECHANICAL MECHANISMS OF SCAPULAR KINEMATIC DEVIATIONS

Mechanism	Associated Effects
Inadequate serratus activation	Lesser scapular upward rotation and posterior tilt
Excess upper trapezius activation	Greater clavicular elevation
Pectoralis minor tightness	Greater scapular internal rotation and anterior tilt
Posterior glenohumeral joint soft tissue tightness	Greater scapular anterior tilt
Thoracic kyphosis or flexed posture	Greater scapular internal rotation and anterior tilt, lesser scapular upward rotation

Facteurs de risques

Prise en
charge



Facteurs de risques

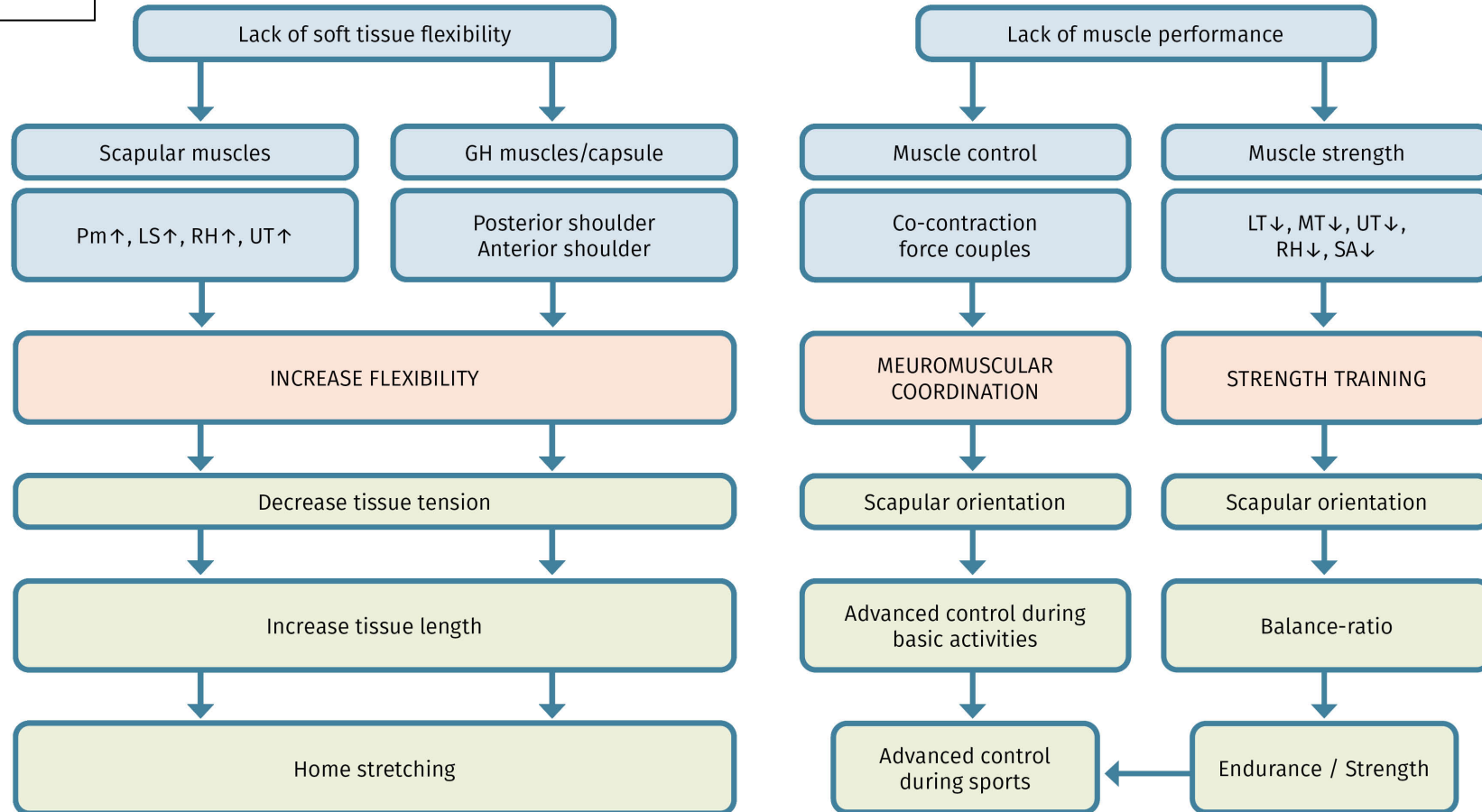


Rehabilitation of scapular dyskinesis: from the office worker to the elite overhead athlete

Ann M J Cools, Filip Struyf, Kristof De Mey, et al.

Br J Sports Med published online May 18, 2013
doi: 10.1136/bjsports-2013-092148

Scapular Rehabilitation Algorithm



Ann Cools 2021



Facteurs de risques

Dyskinésie scapulaire type 1

Manque de flexibilité
tissulaire

Manque de performance
musculaire

Muscles scapulaire

Muscles GH/capsule

Contrôle musculaire

Force musculaire

Raideur pt.pectoral

GIRD

Dysfonction trapèze inf/dentelé ant

- **Exercices avec une composante de RL=> trapèze inf**
- **Ajouter une composante extension thoracique**
- **Chaîne fermée augmente l'activité du petit pectoral**

Rehabilitation of shoulder impingement syndrome and rotator cuff injuries: an evidence-based review

Todd S Ellenbecker¹, Ann Cools²



Facteurs de risques

Rehabilitation of Scapular Muscle Balance

Which Exercises to Prescribe?

Ann M. Cools,^{*,†} PT, PhD, Vincent Dewitte,[†] PT, Frederick Lanszweert,[†] PT, Dries Notebaert,[†] PT, Arne Roets,[‡] MPSS, Barbara Soeters,[‡] PhD, Barbara Cagnie,[†] PT, PhD, and Erik E. Witvrouw,[†] PT, PhD
From the [†]Department of Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Health Sciences, University Hospital, Ghent, Belgium, and the [‡]Department of Developmental, Personality and Social Psychology, Faculty of Psychology and Educational Sciences, Ghent University, Ghent, Belgium



Facteurs de risques

Kinetic chain influences on upper and lower trapezius muscle activation during eight variations of a scapular retraction exercise in overhead athletes

Kristof De Mey^{a,*}, Lieven Danneels^a, Barbara Cagnie^a, Lotte Van den Bosch^b, Johan Flier^b, Ann M. Cools^a

^a Department of Rehabilitation Sciences and Physiotherapy, University Hospital, Belgium

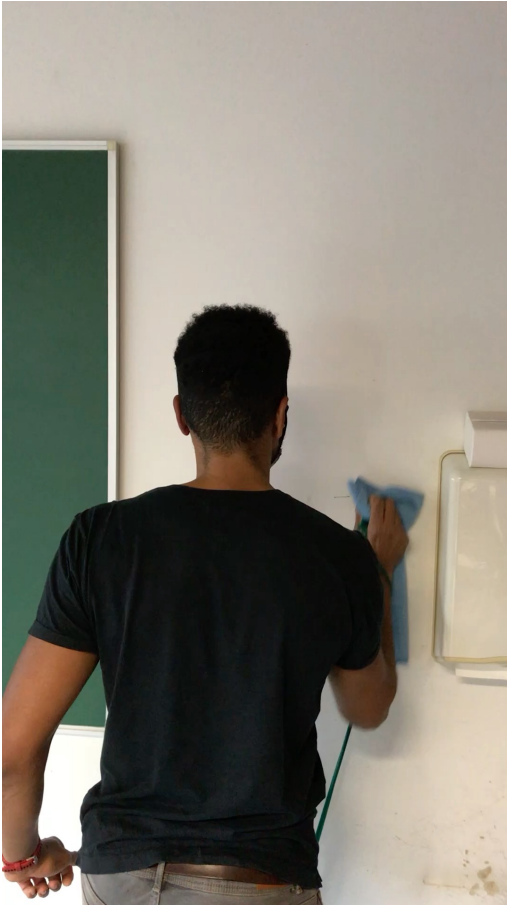
^b Private Practice, The Netherlands



Facteurs de risques

BIRGIT CASTELEIN, PT, MSc¹ • BARBARA CAGNIE, PT, PhD¹
THIERRY PARLEVLIET, MD² • ANN COOLS, PT, PhD¹

Superficial and Deep Scapulothoracic Muscle Electromyographic Activity During Elevation Exercises in the Scapular Plane



Facteurs de risques

Dyskinésie scapulaire type 2

Manque de flexibilité
tissulaire

Muscles scapulaire

Muscles GH/capsule

Posture générale en protraction

Manque de performance
musculaire

Contrôle musculaire

Force musculaire

Dysfonction des 3
parties du trapèze / dentelé antérieur

- **Mobilisation et renforcement du tronc (extension et rotation).**
- **Exercices avec composante de pro-rétraction + une position de 90° d'élévation + mouvements de rotation du tronc.**

Facteurs de risques



Facteurs de risques

Dyskinésie scapulaire type 3

Manque de flexibilité
tissulaire

Manque de performance
musculaire

Muscles scapulaire

Muscles GH/capsule

Contrôle musculaire

Force musculaire

Raideur élévateur
de la scapula

Dysfonction des couples de force
Trap sup/ dentelé antérieur & Trap sup/ trap inf

- **Focus sur la « upward rotation » avec réalisation d'exercices en élévation haute.**

Facteurs de risques

Original article

Modifying the shoulder joint position during shrugging and retraction exercises alters the activation of the medial scapular muscles



Birgit Castelein ^{a,*}, Ann Cools ^a, Thierry Parlevliet ^b, Barbara Cagnie ^a

^a Department of Rehabilitation Sciences and Physiotherapy, Faculty of Medicine and Health Sciences, University Hospital, Ghent, Belgium

^b Department of Physical Medicine and Orthopedic Surgery, University Hospital, Ghent, Belgium



Facteurs de risques



Facteurs de risques

Review

The challenge of the sporting shoulder: From injury prevention through sport-specific rehabilitation toward return to play

Ann M. Cools^{a,b,*}, Annelies G. Maenhout^a, Fran Vanderstukken^a, Philippe Declève^{a,c}, Fredrik R. Johansson^d, Dorien Borms^a



Ajouter une composante **de RE pour augmenter** l'activation du trapèze inférieur et moyen.

Les mains **ouvertes augmentent** l'activation trapèze inférieur.

Activation du **dentelé antérieur augmente** lors d'exercices en élévation plutôt que protraction.

L'activation du **petit pectoral diminue** si exercice avec une composante de **RE et chaîne ouverte**.



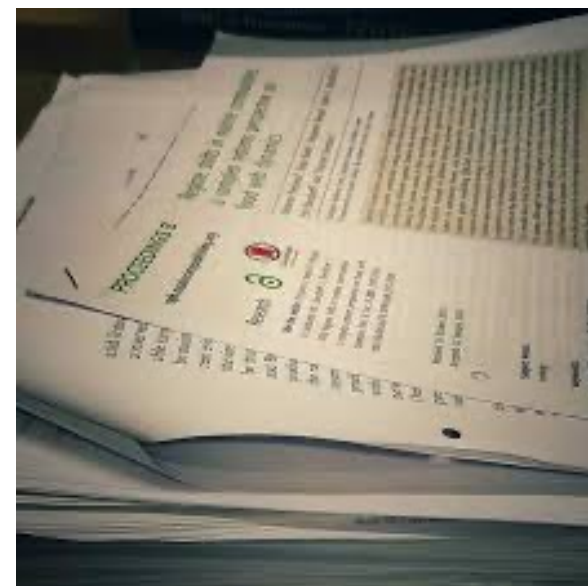
Facteurs de risques

Que dit la littérature?

L'effet de la dyskinésie scapulaire sur la performance n'est pas clair.

Important de considérer la scapula dans une approche holistique lors de la rééducation du complexe de l'épaule, en renforçant par exemple la chaîne cinétique pour améliorer la mécanique scapulaire.

Screening de la dyskinésie scapulaire chez les athlètes sans symptôme n'apporterait pas grand-chose. La dyskinésie scapulaire est présente chez 53% des gens sains et 61% des athlètes.



Facteurs de risques

Force de la coiffe des rotateurs



Facteurs de risques

Evaluation de la force de la coiffe des rotateurs



Facteurs de risques

Evaluation de la force de la coiffe des rotateurs

Isométrique

- HHD placé sur la partie proximale du poignet sur la partie dorsale (RE) ou palmaire (RI)
- « Make » test ou « break » test



Excentrique

- Bras à 90° - 90°
- Réaliser une RI en 3 sec à partir de 90° pendant que le patient résiste au maximum en réalisant une RE

- Pas de douleur pendant le testing
- Capable de maintenir la position du test
- >3/5 testing manuel

Facteurs de risques

Evaluation de la force excentrique de la coiffe des rotateurs
À l'aide du HHD.

Clinométrie:
intra ICC: 0.88, Inter ICC 0.71
MDC 25N.
Ratio Exc RE/isom RI: $\pm 100\%$.



Facteurs de risques

Valeurs de références

Eccentric and isometric shoulder rotator cuff strength testing using a hand-held dynamometer: reference values for overhead athletes

Ann M. J. Cools¹ · Fran Vanderstukken¹ · Frédéric Vereecken¹ · Mattias Duprez¹ · Karel Heyman¹ · Nick Goethals¹ · Fredrik Johansson^{1,2}



Table 4 Descriptive analysis (means and SDs) of the results of the eccentric and isometric strength for the male subjects ($n = 101$)

Males	Ecc ER				Isom ER 90–0				Isom IR 90–0				Isom ER 90–90				Isom IR 90–90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND

(a) Across all sports disciplines and ages

Mean	171.0	163.6	2.2	2.1	145.2	140.3	1.8	1.8	165.4	153.2	2.1	1.9	106.2	101.6	1.3	1.3	183.3	151.5	2.3	1.9
SD	24.9	29.6	0.4	0.4	28.3	29.8	0.4	0.4	29.6	31.2	0.4	0.4	19.8	23.8	0.3	0.3	45.8	36.9	0.6	0.5



Sports	Ecc ER				Isom ER 90–0				Isom IR 90–0				Isom ER 90–90				Isom IR 90–90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND

(b) Divided per sports discipline

Handball ($n = 32$)

Mean	178.3	172.5	2.2	2.2	152.9	145.6	1.9	1.8	172.7	161.5	2.2	2.0	109.7	105.9	1.4	1.3	200.4	168.1	2.5	2.1
SD	22.7	29.1	0.4	0.4	28.4	30.6	0.4	0.5	30.6	28.7	0.4	0.4	20.	23.4	0.3	0.4	51.3	40.8	0.7	0.6

Tennis ($n = 32$)

Mean	169.2	160.8	2.2	2.0	138.9	134.8	1.8	1.7	164.7	149.6	2.1	1.9	108.4	101.7	1.4	1.3	179.2	147.7	2.3	1.9
SD	26.8	30.3	0.4	0.4	31.1	31.2	0.3	0.4	27.5	33.2	0.3	0.4	20.1	23.5	0.3	0.3	37.7	32.7	0.4	0.4

Volleyball ($n = 37$)

Mean	166.4	158.2	2.1	2.0	144.1	140.6	1.8	1.8	156.0	149.7	2.0	1.9	101.3	97.8	1.3	1.22	172.0	140.4	2.1	1.8
SD	24.3	28.6	0.4	0.4	24.7	27.9	0.3	0.4	30.	30.8	0.3	0.4	19.0	24.2	0.3	0.3	44.0	32.3	0.5	0.4

Age category	Ecc ER				Isom ER 90–0				Isom IR 90–0				Isom ER 90–90				Isom IR 90–90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND

(c) Divided per age category

18–25 ($n = 53$)

Mean	170.3	163.6	2.2	2.1	145.0	139.6	1.9	1.8	160.9	149.2	2.1	1.9	106.2	102.0	1.4	1.3	181.9	150.7	2.3	1.9
SD	21.6	26.9	0.3	0.4	25.9	28.4	0.4	0.4	29.7	30.8	0.4	0.4	18.5	24.0	0.3	0.3	49.2	39.6	0.6	0.5

26–33 ($n = 29$)

Mean	174.0	165.7	2.2	2.0	146.6	142.8	1.8	1.8	172.0	156.9	2.1	1.9	107.8	102.0	1.3	1.3	189.4	153.1	2.3	1.9
SD	27.4	29.7	0.4	0.4	32.9	30.8	0.4	0.4	30.4	28.5	0.3	0.3	22.7	23.8	0.4	0.3	46.3	34.0	0.6	0.5

34–50 ($n = 19$)

Mean	168.7	160.2	2.0	1.9	143.7	138.6	1.7	1.7	167.9	159.0	2.1	1.9	103.9	99.9	1.2	1.2	177.8	151.4	2.1	1.8
SD	30.3	37.5	0.4	0.5	28.7	33.3	0.3	0.4	27.5	36.0	0.4	0.4	19.6	24.5	0.3	0.3	35.2	35.2	0.4	0.4

Absolute (N) as well as normalized (N/kg) strength data are displayed



Table 6 Results for the males ($n = 101$) for the ER/IR ratios

Males	Isom ER/IR 90–0		Isom ER/IR 90–90		EccER/isomIR 90–0		EccER/isomIR 90–90	
	D	ND	D	ND	D	ND	D	ND
(a) Across all sports disciplines and ages								
Mean	0.89	0.93	0.59	0.69	1.06	1.09	0.97	1.12
SD	0.15	0.14	0.12	0.15	0.19	0.20	0.20	0.23

Sports discipline	Isom ER/IR 90–0		Isom ER/IR 90–90		EccER/isomIR 90–0		EccER/isomIR 90–90	
	D	ND	D	ND	D	ND	D	ND

(b) Divided per sports discipline

Handball ($n = 32$)

Mean	0.89	0.91	0.57	0.65	1.01	1.05	0.97	1.10
SD	0.15	0.12	0.11	0.10	0.19	0.23	0.15	0.23

Tennis ($n = 32$)

Mean	0.85	0.91	0.62	0.70	1.05	1.09	0.98	1.10
SD	0.15	0.15	0.11	0.14	0.16	0.20	0.25	0.26

Volleyball ($n = 37$)

Mean	0.92	0.96	0.60	0.72	1.10	1.12	0.96	1.14
SD	0.14	0.14	0.14	0.18	0.20	0.19	0.21	0.22

Age category	Isom ER/IR 90–0		Isom ER/IR 90–90		EccER/isomIR 90–0		EccER/IsomIR 90–90	
	D	ND	D	ND	D	ND	D	ND

(c) Divided per age category

18–25 ($n = 53$)

Mean	0.91	0.94	0.61	0.7	1.02	1.08	0.98	1.16
SD	0.14	0.12	0.13	0.15	0.17	0.23	0.19	0.27

26–33 ($n = 29$)

Mean	0.86	0.91	0.58	0.68	1.04	1.04	0.92	1.04
SD	0.15	0.12	0.13	0.14	0.16	0.14	0.22	0.18

34–50 ($n = 19$)

Mean	0.87	0.89	0.59	0.68	1.16	1.17	1.02	1.11
SD	0.15	0.19	0.1	0.17	0.23	0.19	0.20	0.16



Table 5 Descriptive analysis of the results of the eccentric and isometric strength for the female subjects ($n = 100$)

Females	Ecc ER				Isom ER 90-0				Isom IR 90-0				Isom ER 90-90				Isom IR 90-90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D		ND		D		ND		D		ND		D		ND		D		ND	

(a) Across all sports disciplines and ages

Mean	143.7	134.6	2.2	2.1	113.8	109.3	1.7	1.7	112.5	111.5	1.7	1.7	94.2	88.7	1.4	1.4	114.0	104.5	1.8	0.6
SD	32.4	33.3	0.6	0.5	26.3	26.2	0.4	0.4	20.4	22.5	0.3	0.4	23.2	20.3	0.4	0.3	31.3	28.9	0.5	0.5

Sports	Ecc ER				Isom ER 90-0				Isom IR 90-0				Isom ER 90-90				Isom IR 90-90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D		ND		D		ND		D		ND		D		ND		D		ND	

b) Divided per sports discipline

Handball ($n = 32$)

Mean	163.0	154.9	2.5	2.3	138.8	125.4	2.0	1.9	122.8	121.6	1.8	1.8	115.7	102.0	1.7	1.5	134.9	123.9	2.0	1.9
SD	27.8	29.5	0.5	0.5	21.2	23.3	0.3	0.3	21.6	20.8	0.3	0.3	20.1	20.1	0.3	0.3	28.7	28.1	0.5	0.5

Tennis ($n = 33$)

Mean	144.8	126.4	2.3	2.0	104.8	99.3	1.7	1.6	108.3	105.7	1.7	1.7	87.5	83.2	1.4	1.3	107.7	99.1	1.7	1.6
SD	29.8	25.9	0.5	0.5	25.2	24.8	0.4	0.4	19.9	20.8	0.4	0.4	15.8	15.8	0.3	0.3	29.1	25.6	0.5	0.4

Volleyball ($n = 35$)

Mean	125.1	122.7	1.9	1.9	103.2	103.9	1.6	1.6	107.1	107.7	1.6	1.6	80.8	81.8	1.2	1.2	100.7	91.9	1.5	1.4
SD	28.6	34.6	0.5	0.6	19.9	23.6	0.4	0.4	16.3	23.0	0.3	0.4	17.4	18.9	0.3	0.3	25.8	23.3	0.5	0.4



Age category	Ecc ER				Isom ER 90–0				Isom IR 90–0				Isom ER 90–90				Isom IR 90–90			
	ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM		ABS		NORM	
	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND	D	ND

(c) Divided per age category

18–25 ($n = 56$)

Mean	135.5	130.7	2.1	2.0	112.5	107.1	1.7	1.7	111.1	110.5	1.7	1.7	91.0	85.7	1.4	1.3	112.1	100.7	1.7	1.6
SD	30.9	35.8	0.5	0.6	26.8	25.9	0.4	0.4	20.7	22.8	0.3	0.4	22.9	19.0	0.4	0.3	32.1	27.8	0.5	0.4

26–33 ($n = 23$)

Mean	159.1	150.7	2.5	2.3	122.7	122.0	1.9	1.9	120.3	118.2	1.8	1.8	106.9	101.0	1.7	1.6	127.2	118.9	2.0	1.8
SD	34.6	26.3	0.7	0.5	24.6	19.6	0.4	0.4	17.0	19.6	0.3	0.3	20.6	20.8	0.4	0.4	28.5	30.9	0.5	0.6

34–50 ($n = 21$)

Mean	148.7	125.6	2.2	1.9	107.6	100.9	1.6	1.5	107.7	106.7	1.6	1.6	88.6	83.2	1.3	1.2	104.9	99.0	1.6	1.5
SD	28.0	27.8	0.5	0.4	25.4	29.1	0.4	0.4	21.6	23.8	0.3	0.3	22.8	18.5	0.4	0.2	28.3	25.1	0.5	0.4

Absolute (N) as well as normalized (N/kg) strength data are displayed



Table 7 Results for the females ($n = 100$) for the ER/IR ratios

Females	Isom ER/IR 90-0		Isom ER/IR 90-90		EccER/isomIR 90-0		EccER/IsomIR 90-90	
	D	ND	D	ND	D	ND	D	ND
(a) Across all sports disciplines and ages								
Mean	1.02	0.93	0.85	0.87	1.29	1.21	1.31	1.31
SD	0.16	0.14	0.15	0.16	0.25	0.24	0.30	0.27
Sports	Isom ER/IR 90-0		Isom ER/IR 90-90		EccER/isomIR 90-0		EccER/isomIR 90-90	
	D	ND	D	ND	D	ND	D	ND

(b) Divided per sports discipline

Handball ($n = 32$)

Mean	1.12	1.04	0.88	0.84	1.18	1.15	1.30	1.36
SD	0.17	0.15	0.14	0.14	0.24	0.27	0.30	0.30

Tennis ($n = 33$)

Mean	0.97	0.95	0.85	0.86	1.31	1.26	1.21	1.27
SD	0.14	0.15	0.15	0.14	0.25	0.23	0.24	0.23

Volleyball ($n = 35$)

Mean	0.97	0.98	0.83	0.91	1.37	1.23	1.41	1.32
SD	0.12	0.15	0.16	0.18	0.24	0.21	0.33	0.26

Age category	Isom ER/IR 90-0		Isom ER/IR 90-90		EccER/isomIR 90-0		EccER/isomIR 90-90	
	D	ND	D	ND	D	ND	D	ND

(c) Divided per age category

18-25 ($n = 56$)

Mean	1.02	0.98	0.84	0.88	1.28	1.21	1.32	1.31
SD	0.16	0.16	0.14	0.16	0.25	0.23	0.32	0.26

26-33 ($n = 23$)

Mean	1.02	1.05	0.87	0.88	1.31	1.17	1.29	1.32
SD	0.16	0.16	0.16	0.18	0.31	0.26	0.26	0.28

34-50 ($n = 21$)

Mean	1.00	0.95	0.87	0.86	1.31	1.27	1.29	1.32
SD	0.15	0.11	0.16	0.14	0.21	0.24	0.30	0.29

Ecc eccentric, Isom isometric, ER external rotation, IR internal rotation, 90-0 90° of abduction 0° of external rotation, 90-90 90° of abduction 90° of external rotation, ABS absolute strength data, NORM data normalized to body weight, D dominant, ND non-dominant

Retour aux sports





2016 Consensus statement on return to sport from the First World Congress in Sports Physical Therapy, Bern

Clare L Ardern,^{1,2,3} Philip Glasgow,^{4,5} Anthony Schneiders,⁶ Erik Witvrouw,^{1,7}
Benjamin Clarsen,^{8,9} Ann Cools,⁷ Boris Gojanovic,^{10,11} Steffan Griffin,¹²
Karim M Khan,¹³ Håvard Moksnes,^{8,9} Stephen A Mutch,^{14,15} Nicola Phillips,¹⁶
Gustaaf Reurink,¹⁷ Robin Sadler,¹⁸ Karin Grävare Silbernagel,¹⁹ Kristian Thorborg,^{20,21}
Arnlaug Wangensteen,^{1,8} Kevin E Wilk,²² Mario Bizzini²³

RETURN TO
PARTICIPATION

RETURN TO
SPORT

RETURN TO
PERFORMANCE

Return to participation. The athlete may be participating in rehabilitation, training (modified or unrestricted), or in sport, but at a level lower than his or her RTS goal. The athlete is physically active, but not yet 'ready' (medically, physically and/or psychologically) to RTS. It is possible to train to perform, but this does not automatically mean RTS.

Return to performance. This extends the RTS element. The athlete has gradually returned to his or her defined sport and is performing at or above his or her preinjury level. For some athletes this stage may be characterised by personal best performance or expected personal growth as it relates to performance.

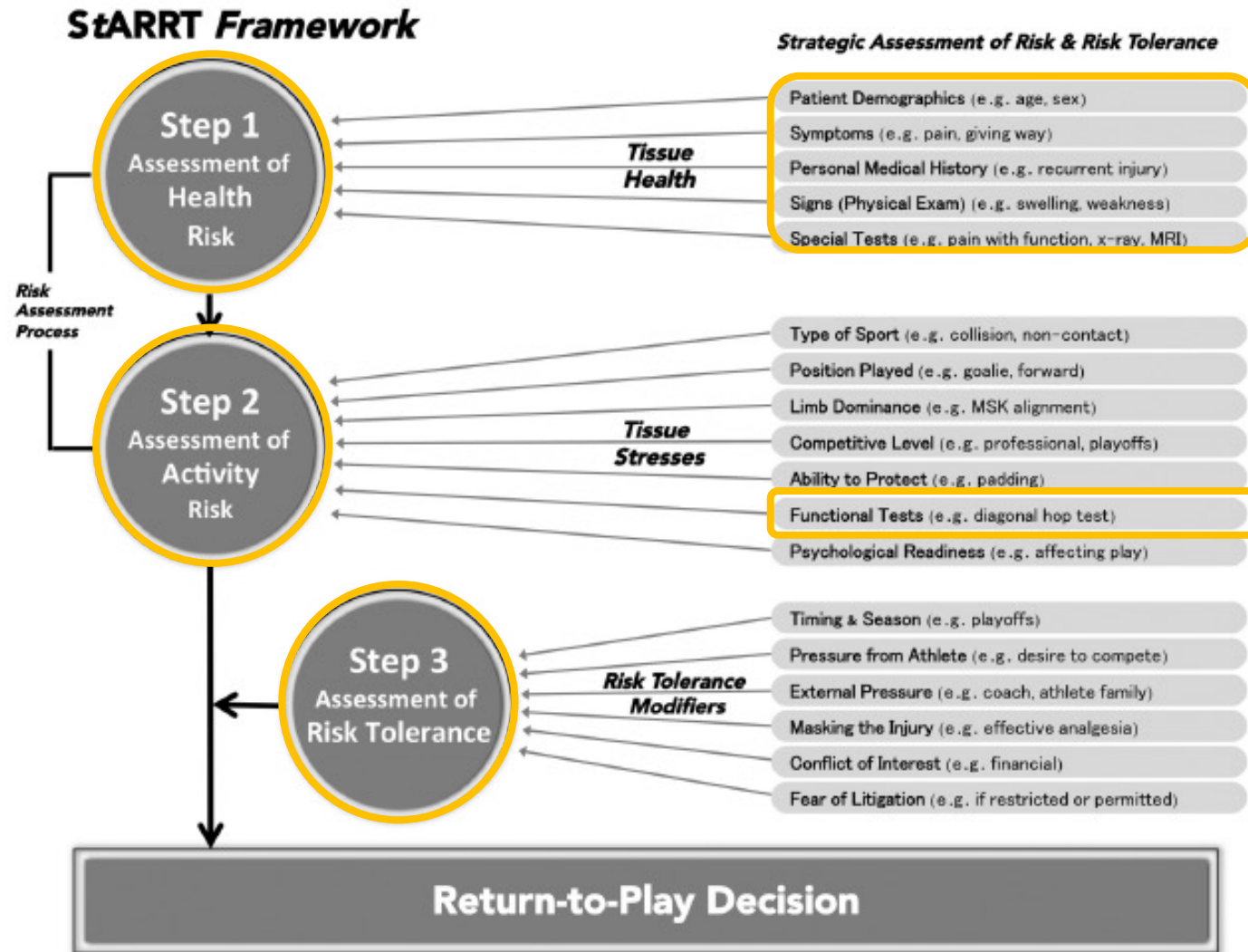
Return to sport (RTS). The athlete has returned to his or her defined sport, but is not performing at his or her desired performance level. Some athletes may be satisfied with reaching this stage, and this can represent successful RTS for that individual.



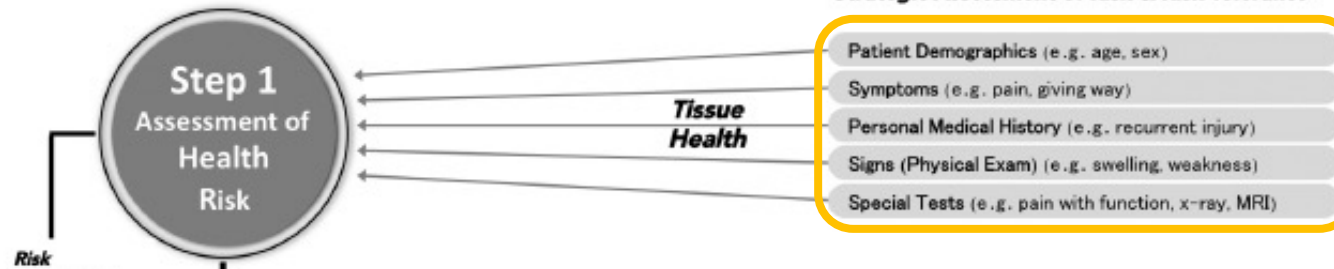
Algorithmme décisionnel

Strategic Assessment of Risk and Ri:
(StARRT) framework for return-to-pl
decision-making

Ian Shrier



StARRT Framework



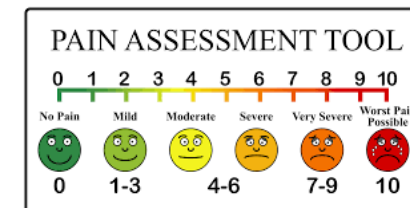
Faiblesse
de la coiffe
des
rotateurs

Dyskinésie
scapulaire

Déficit
amplitude

Absence
douleur

...



Review

The challenge of the sporting shoulder: From injury prevention through sport-specific rehabilitation toward return to play

Ann M. Cools^{a,b,*}, Annelies G. Maenhout^a, Fran Vanderstukken^a, Philippe Declève^{a,c}, Fredrik R. Johansson^d, Dorien Borms^a



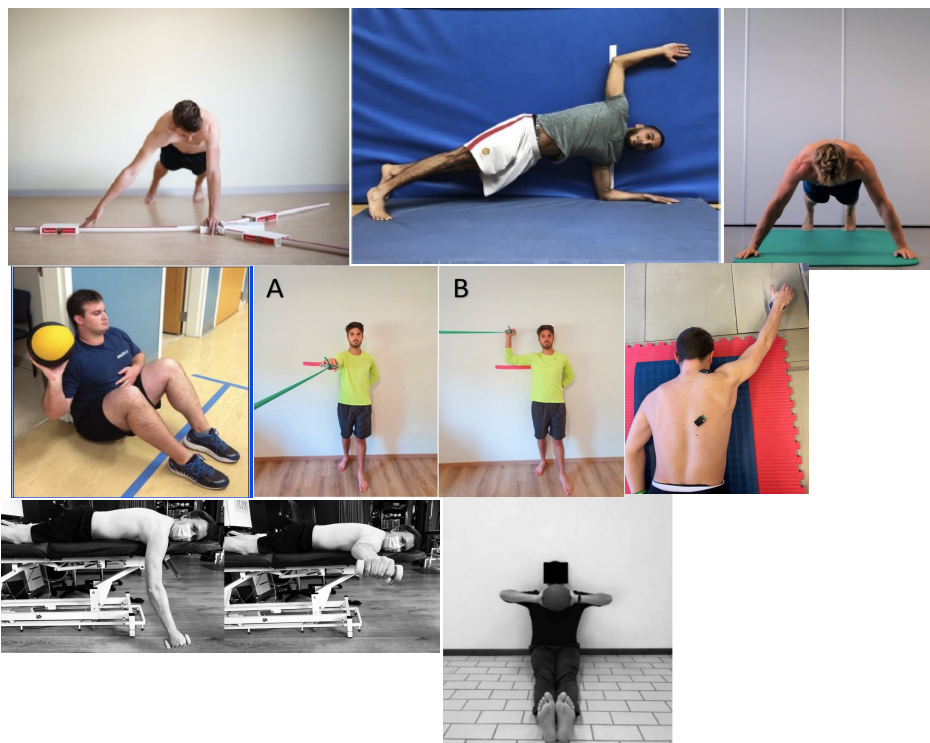
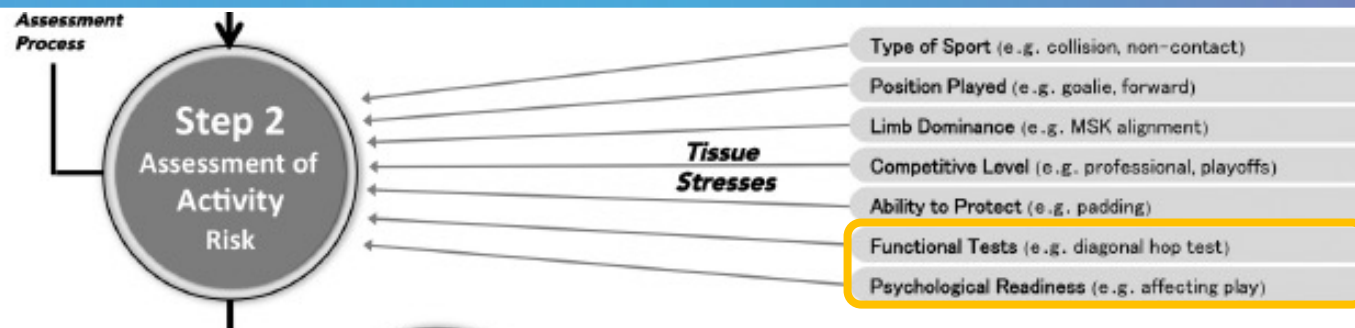
Recommended screening tests for the overhead athlete's shoulder function.

Measurement category	Measurement	MDC	Normal values
ROM (in°)	IR	5°	<20° side difference
	ER		5–10° D > ND
	TROM	–	<10° side difference
Rotator cuff strength (in N)	IR	10–15N	10% D > ND
	ER		
	ER/IR ratio	–	0°–0°: 70–75% 90°–0°: 100% 90°–90°: 60–85%



isocinétique RE/RI ratio

63% to 72%



Echelle SIRSI

Instructions:

Merci de répondre aux questions suivantes concernant le sport principal que vous pratiquiez avant l'accident. Pour chaque question, cochez la case entre les deux extrêmes selon ce qui vous paraît correspondre le mieux à votre situation actuelle.

1. Pensez-vous pouvoir pratiquer votre sport au même niveau qu'auparavant?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totalemement sûr

2. Pensez-vous que vous pourriez vous blesser de nouveau l'épaule si vous repreniez le sport?

Extrêmement probable 0 1 2 3 4 5 6 7 8 9 10 Pas du tout probable

3. Êtes-vous inquiet à l'idée de reprendre votre sport?

Extrêmement inquiet 0 1 2 3 4 5 6 7 8 9 10 Pas du tout inquiet

4. Pensez-vous que votre épaule sera stable lors de votre pratique sportive ?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totalemement sûr

5. Pensez-vous pouvoir pratiquer votre sport sans vous soucier de votre épaule ?

Pas du tout sûr 0 1 2 3 4 5 6 7 8 9 10 Totalemement sûr

6. Êtes-vous frustré de devoir tenir compte de votre épaule lors de votre pratique sportive ?

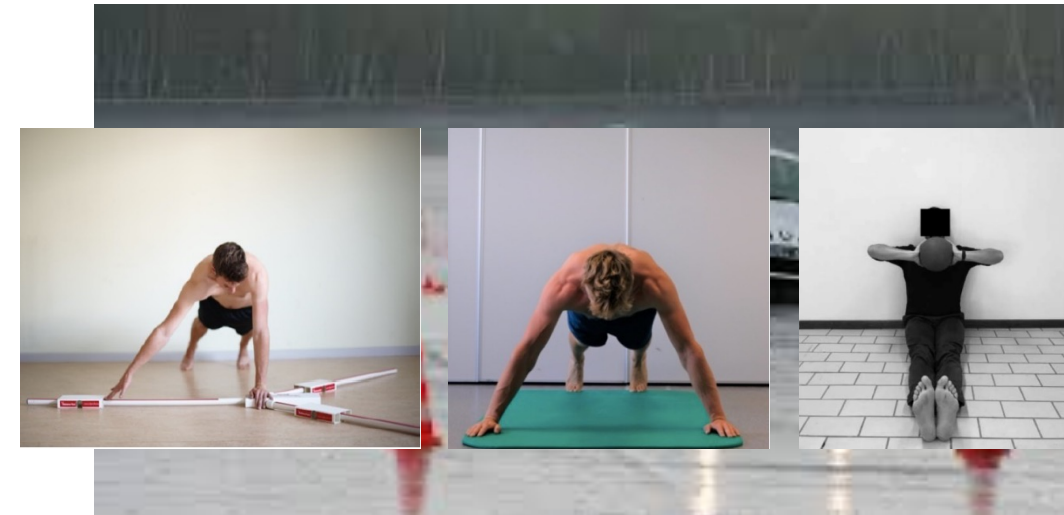
Extrêmement frustré 0 1 2 3 4 5 6 7 8 9 10 Pas du tout frustré

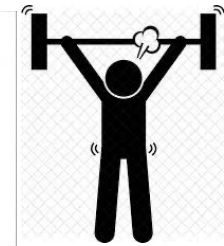
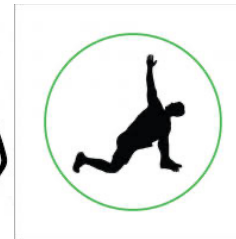
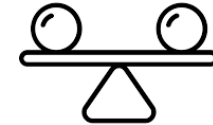
Combinaison évaluation analytique et tests de performance physique

Analytique



Tests de performance physique







Y-Balance Test



CKCUEST

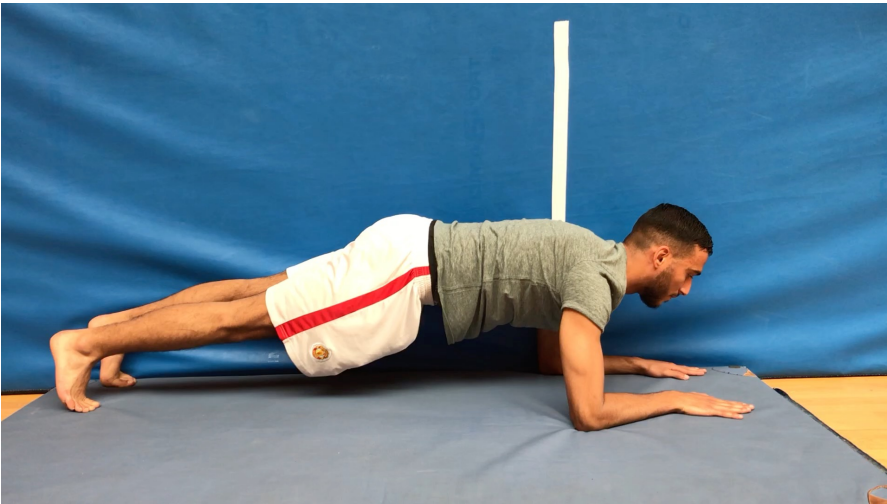


SMBT
Unilateral
Seated
Shot Put Test



PSET

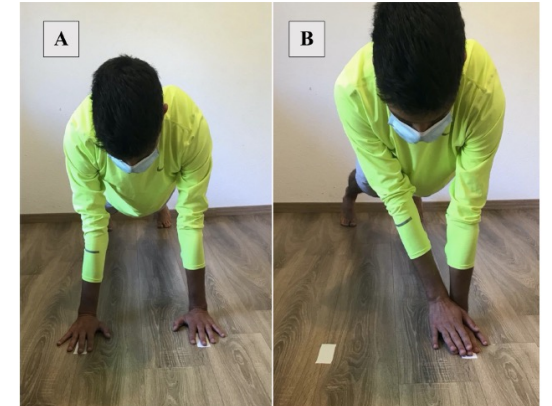
UPDATE



Upper Limb Rotation Test
(ULRT)



Shoulder Endurance Test
(SET)



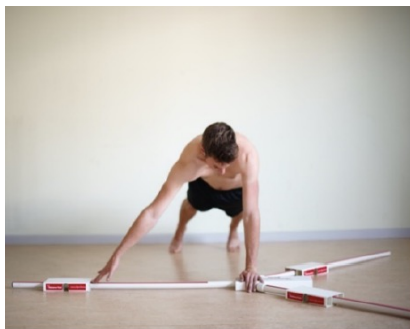
Modified CKCUEST

SEM et MDC



ICC
0.85 - 0.97

SEM = 1.45-2.7
MDC = 2- 4



ICC
0.8 - 0.96

SEM = 1.6 -2.9 cm
MDC = 4 – 8 cm



ICC
0.93 - 0.97

SEM = 11 cm
MDC = 30 cm



ICC
0.85

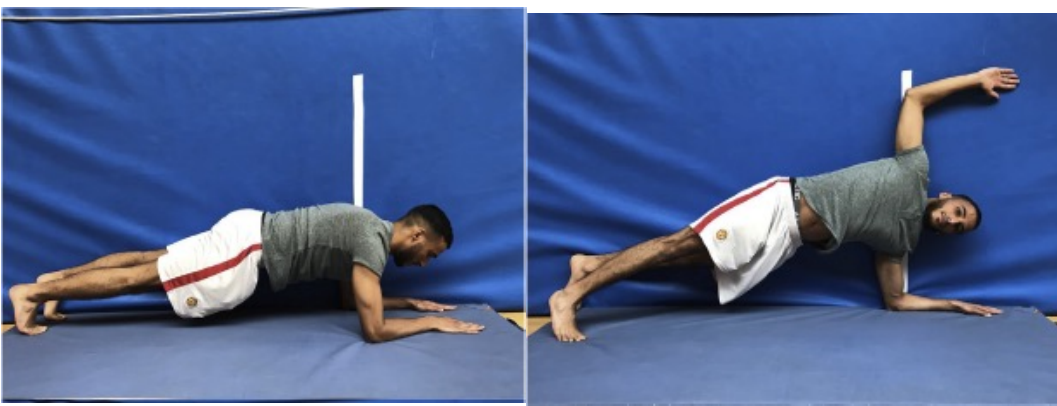
SEM = 3
MDC = 4



ICC
0.97 - 0.98

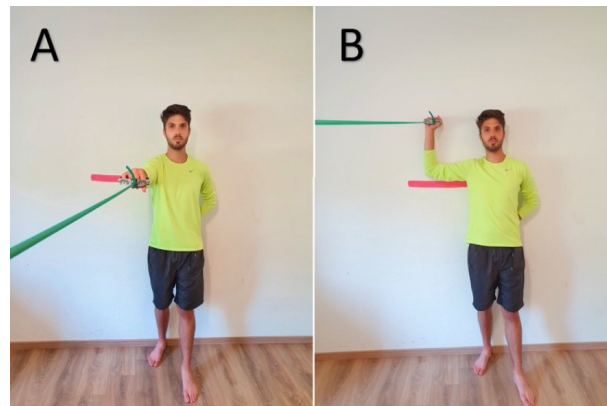
SEM = 18 – 20 cm
MDC = 43 - 46 cm

SEM et MDC



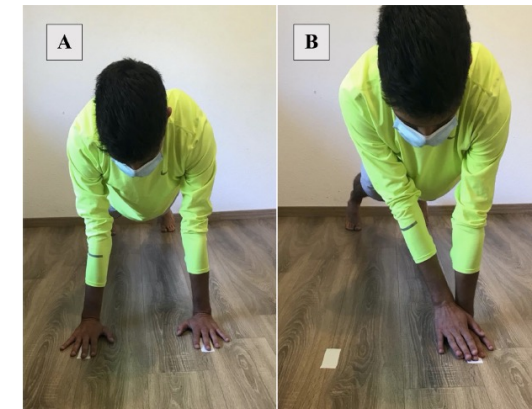
ICC
0.76 - 0.78

SEM = 1 touche
MDC = 3 touches



ICC
0.78 - 0.93

SEM = 10 - 16 sec
MDC = 29 - 45 sec



ICC
0.86 - 0.93

SEM = 1 touche
MDC = 3 touches

Données normatives (ULRT)

					
 ado	16-17 14	10/18- 19 19	13 14-15	13 NA	NA NA
 ado	10-12 13	10/17 16	12/13-14 15-16	12 NA	11 NA

Données normatives (SET)



ND D



ND D



ND D



ND D



ND D



9-12 65-76
13-15 97-111
16-18 134-160

12-14 54-58
15-17 81-100

85-91
95-100

66-74
68-85

NA
NA



9-12 65-76
13-15 84-114
16-18 98-125

12-14 59-65
15-17 73-86

86-99
102-114

NA
NA

77-85
103-104

Choix des tests



Cools et al.2021, Declève et al.2021, Tooth et al.2022



Tests / Sports



Tests / Sports

HANDBALL

Upper Limb Rotation Test (ULRT)

Athletic Shoulder Test (AST)

Closed Kinetic Chain Upper Extremity Stability Test (CKCUEST)

Single Arm Medicine Ball Throw (SAMBT)



Tests / Sports

VOLLEYBALL

Single Arm Medicine Ball Throw (SAMBT)

Athletic Shoulder Test (AST)

Upper Limb Rotation Test (ULRT)



Tooth et al.2022



Tests / Sports

NATATION	Upper limb rotation test
	Posterior shoulder test



Tests / Sports

TENNIS

Seated Single Arm Shot Put Test (SSASPT)

Athletic Shoulder Test (AST)

Single Arm Medicine Ball Throw (SAMBT)

Upper Limb Rotation Test (ULRT)



Tests / Sports

RUGBY

Upper Quarter Y Balance Test (UQYBT)

Athletic Shoulder Test (AST)

Closed Kinetic Chain Upper Extremity Stability Test (CKCUEST)

Countermovements push-ups (CMP)



Tests / Sports / Instabilité

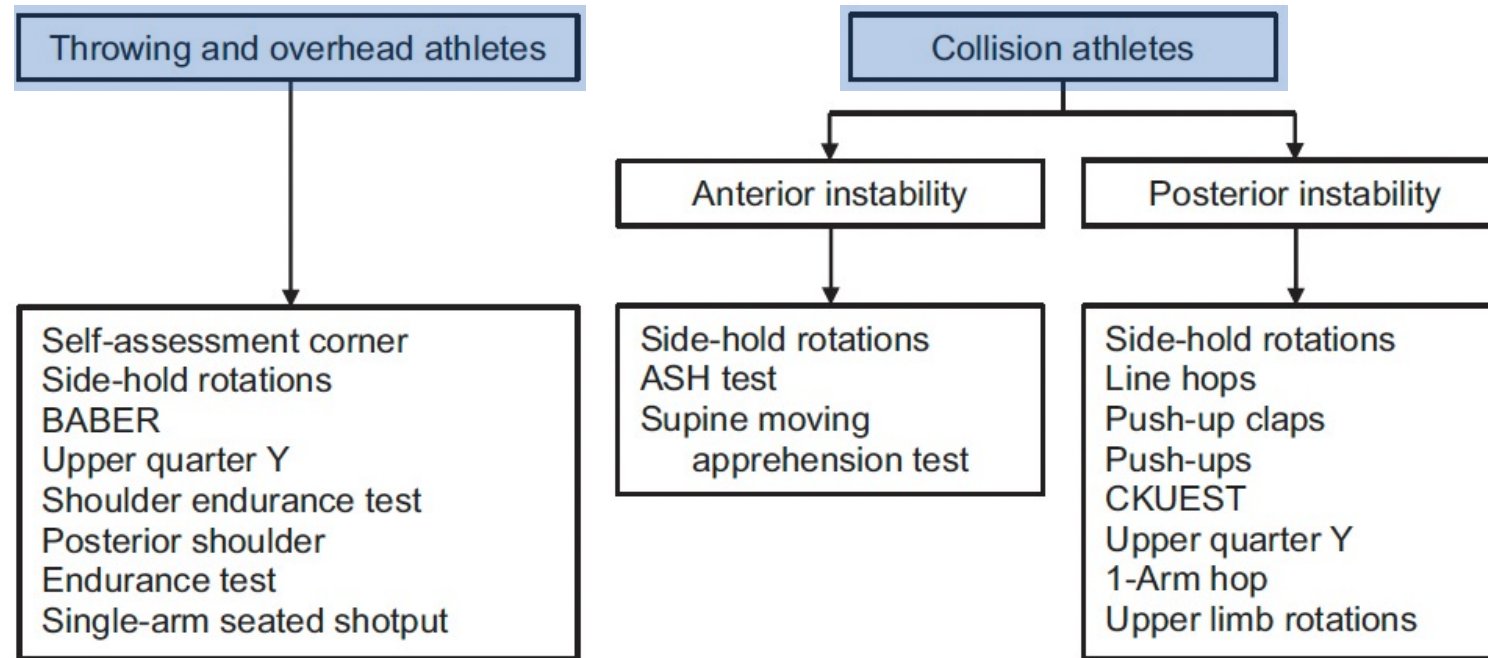


Figure 6. Return-to-sport tests by sport and injury. Abbreviations: ASH, Athletic Shoulder test; BABER, ball abduction external rotation; CKUEST, closed kinetic chain upper extremity stability test.

Tests / Sports / Instabilité

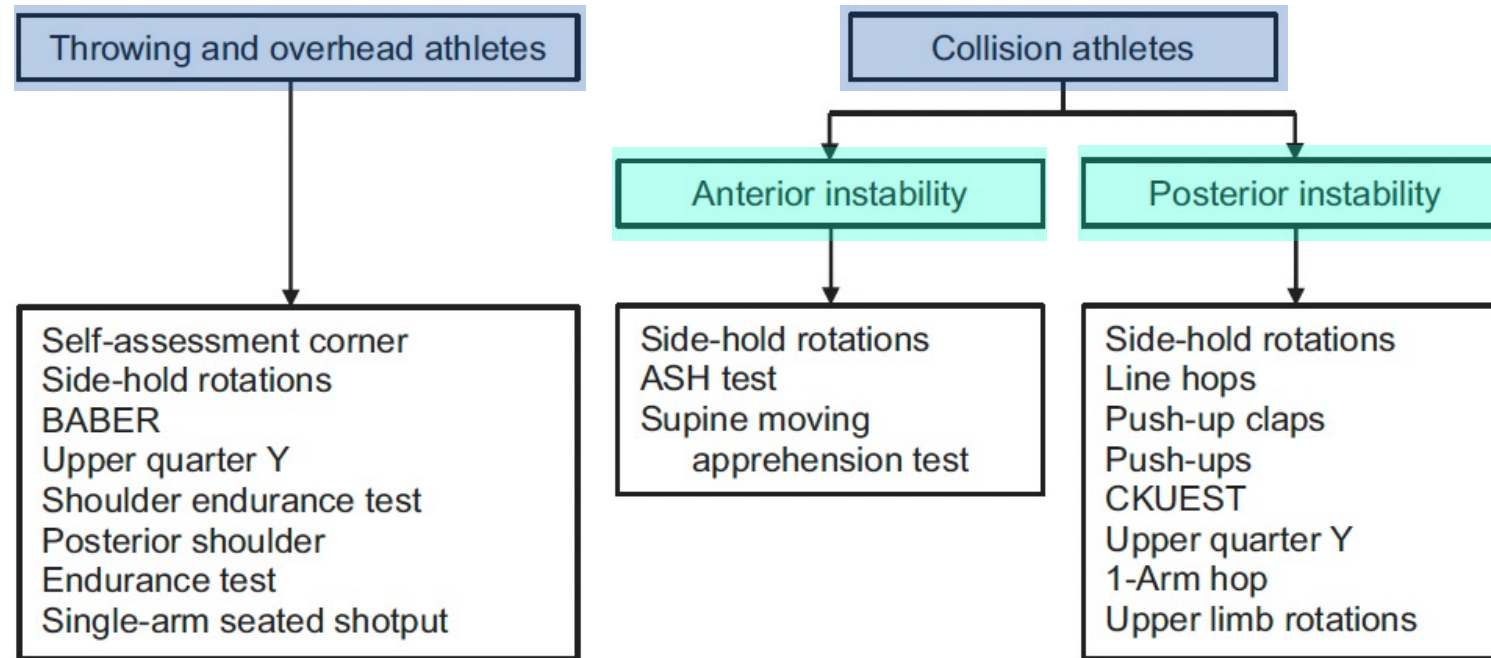


Figure 6. Return-to-sport tests by sport and injury. Abbreviations: ASH, Athletic Shoulder test; BABER, ball abduction external rotation; CKUEST, closed kinetic chain upper extremity stability test.

Tests / paramètre



Modérée à élevée
force isométrique
RE – RI



Modérée à élevée
force isocinétique RE-RI

Elevée
force isocinétique coude

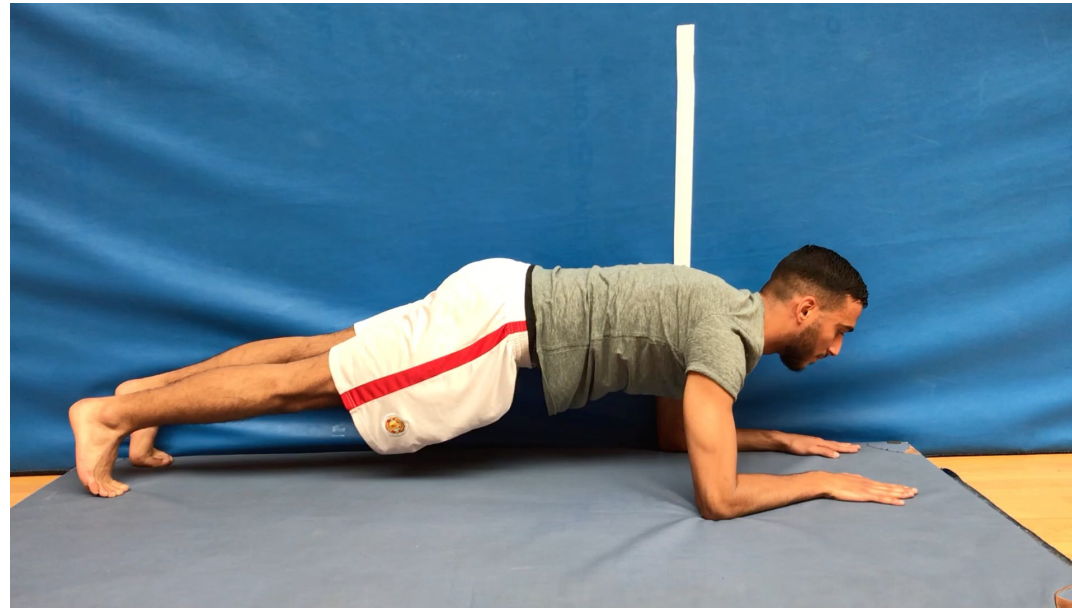
Elevée

Force isocinétique RE-RI
flexion épaule
extension coude



ULRT

Upper Limb Rotation Test



Decleve et al. 2020

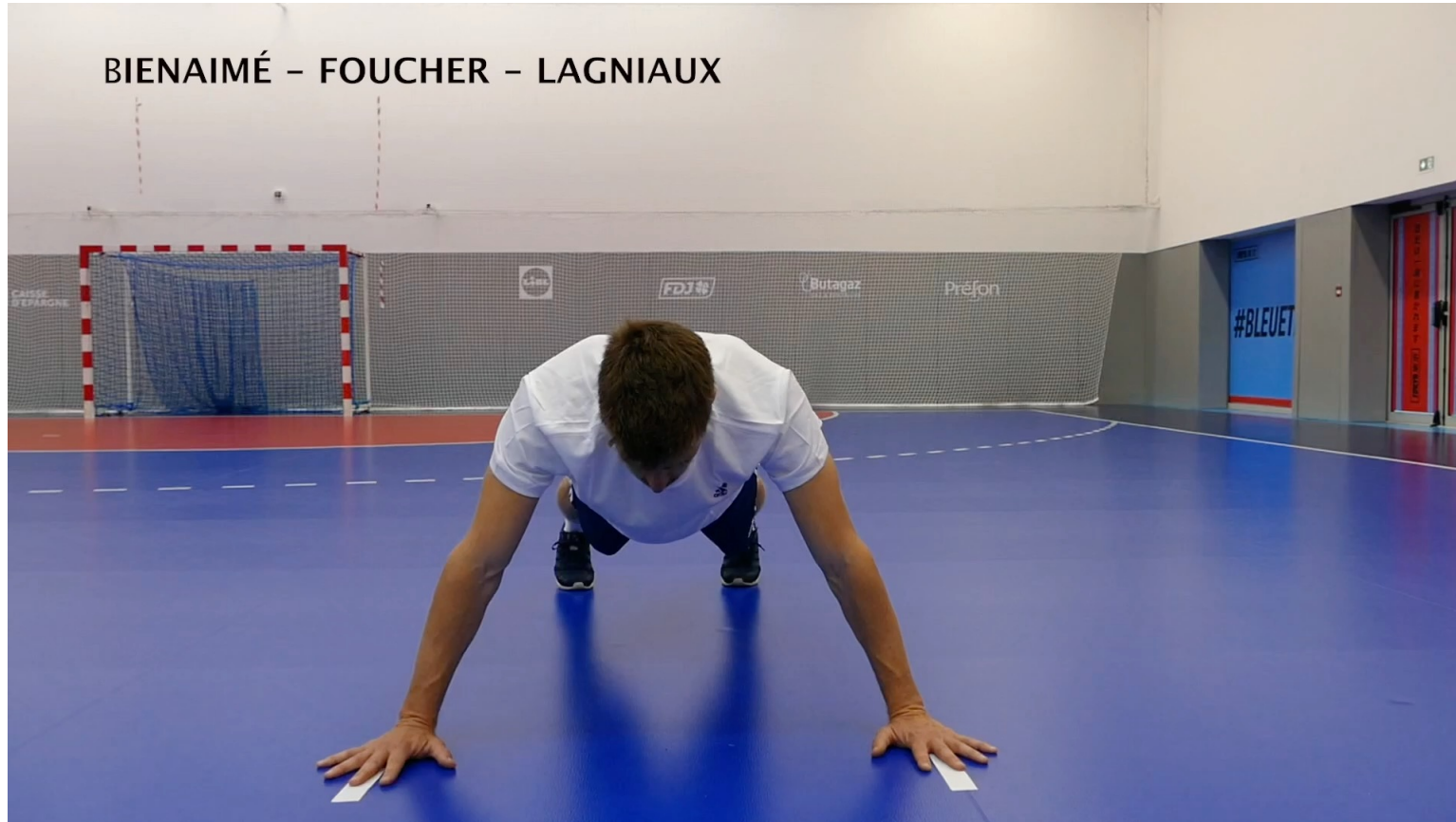
AST



Ashworth et al. 2018

CKCUEST

Closed Kinetic Chain Upper Extremity Stability Test



Goldbeck et al. 2000 ; Tucci et al. 2014 ; De Oliveira et al. 2017 ;



SMBT : Seated Medicine Ball Throw



SSASPT



Negrete et al. 2010, Lee et al. 2015, Popchak et al. 2021



SET

Shoulder Endurance Test



Decleve et al. 2021

UQYBT

Upper Quarter Y Balance Test



BIENAIMÉ – FOUCHER – LAGNIAUX

Gorman et al. 2012



PSET

Posterior Shoulder Endurance Test



Take Home Message



merci