



European School
of Osteopathy

Which exercises are right for my patient?

Philip Bright
PhD BSc PGCRM PGCHE

Overview of session

- Why should I advise exercise
- Why don't patients exercise?
- Attitudes and approaches – alignment
- Personalisation - to prescribe or not?
- How do I monitor?
- What resources can help?
- Will my patients thank me?

Why should I advise exercise?

True or False:

Regular physical activity and exercise training reduces fat intake

Regular exercise impairs the immune system

Exercise has positive effects on depression

General activity has the same effect as task-orientated exercise

Exercise and physical activity are not appropriate for children with autism spectrum disorder

Exercise increases blood sugar levels



Why should I advise exercise?

Regular physical activity and exercise training have long been known to cause adaptations to white adipose tissue

Stanford, K.I., Middelbeek, R.J. and Goodyear, L.J., 2015. Exercise effects on white adipose tissue: being and metabolic adaptations. *Diabetes*, 64(7), pp.2361-2368.

Potential for regular exercise to counteract a range of disease states by modulating cytokine production.

Peake, J., Della Gatta, P., Suzuki, K. and Nieman, D., 2015. Cytokine expression and secretion by skeletal muscle cells: regulatory mechanisms and exercise effects. *Exercise immunology review*, 21, pp.8-25.

The effects of exercise on brain structure in adults, highlight possible neural mechanisms that may mediate the positive effects of exercise on depressive symptoms.

Gujral, S., Aizenstein, H., Reynolds III, C.F., Butters, M.A. and Erickson, K.I., 2017. Exercise effects on depression: possible neural mechanisms. *General hospital psychiatry*, 49, pp.2-10.

Exercise may have regional effects on brain circuitry, with skilled exercise differentially affecting neuroplasticity .

Petzinger, G.M., Holschneider, D.P., Fisher, B.E., McEwen, S., Kintz, N., Halliday, M., Toy, W., Walsh, J.W., Beeler, J. and Jakowec, M.W., 2015. The effects of exercise on dopamine neurotransmission in Parkinson's disease: targeting neuroplasticity to modulate basal ganglia circuitry. *Brain plasticity*, 1(1), pp.29-39.

Why should I advise exercise?

Exercise and physical activity, including basic coordination and strength exercises, as important therapeutic interventions for children with autism spectrum disorder.

Toscano, C.V., Carvalho, H.M. and Ferreira, J.P., 2018. Exercise effects for children with autism spectrum disorder: metabolic health, autistic traits, and quality of life. *Perceptual and motor skills*, 125(1), pp.126-146.

Huntington disease patients are amenable to a specific exercise-induced therapeutic strategy indicated by an increased cardiovascular function and a stabilization of motor function.

Frese, S., Petersen, J.A., Ligon-Auer, M., Mueller, S.M., Mihaylova, V., Gehrig, S.M., Kana, V., Rushing, E.J., Unterburger, E., Kägi, G. and Burgunder, J.M., 2017. Exercise effects in Huntington disease. *Journal of neurology*, 264(1), pp.32-39.

Exercise increases peripheral glucose uptake via insulin-dependent and -independent mechanisms.

Mallad, A., Hinshaw, L., Schiavon, M., Dalla Man, C., Dadlani, V., Basu, R., Lingineni, R., Cobelli, C., Johnson, M.L., Carter, R. and Kudva, Y.C., 2015. Exercise effects on postprandial glucose metabolism in type 1 diabetes: a triple tracer approach. *American Journal of Physiology-Heart and Circulatory Physiology*.

Why don't patients exercise?

Lack of time

Costs

Equipment

Poor fitness

Attitude

Lack of skills

Stamatakis E, Johnson NA, Powell L, *et al*

Short and sporadic bouts in the 2018 US physical activity guidelines: is high-intensity incidental physical activity the new HIIT?

Br J Sports Med Published Online First: 20 February 2019. doi: 10.1136/bjsports-2018-100397

Hunter, J.R., Gordon, B.A., Bird, S.R. and Benson, A.C., 2018. Perceived barriers and facilitators to workplace exercise participation. *International Journal of Workplace Health Management*, 11(5), pp.349-363.

Considerations around attitude

Expectations of the patient

Case history

Activity level

Nature of injury

Benchmark

Manual Therapy 18 (2013) 96–102

Contents lists available at SciVerse ScienceDirect

Manual Therapy

journal homepage: www.elsevier.com/math

ELSEVIER

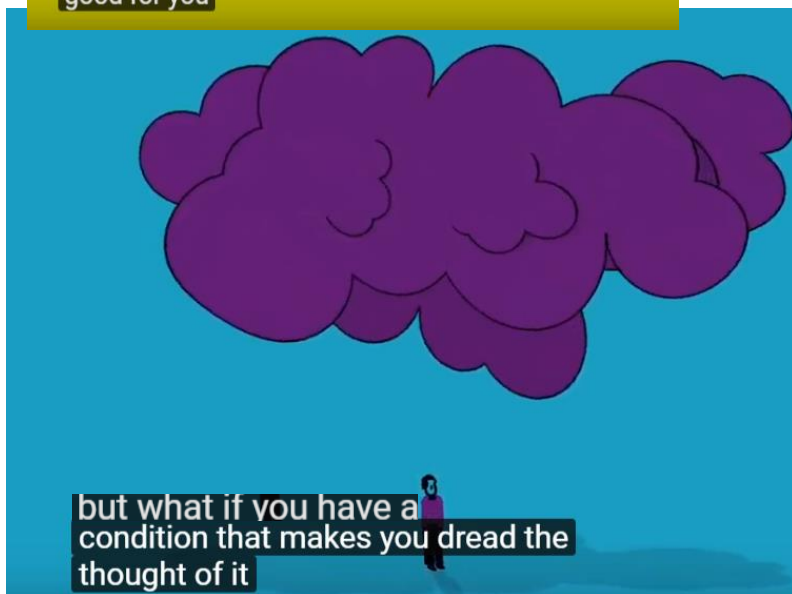
Masterclass

Thinking beyond muscles and joints: Therapists' and patients' attitudes and beliefs regarding chronic musculoskeletal pain are key to applying effective treatment

Jo Nijs^{a,b,d,*}, Nathalie Roussel^{a,c,e}, C. Paul van Wilgen^f, Albère Köke^{g,h}, Rob Smeets^{g,h}

- Patient's attitudes and beliefs influence treatment adherence
- Avoid focusing on the biomedical model for chronic musculoskeletal pain
- Likely to result in poor compliance and a poorer treatment outcome

Patient attitudes



Any bodily activity that enhances or maintains physical fitness and overall health.

Why do it ?



Reduced CHD risk
Reduced CVA
Reduced BP
Improved LDL/HDL
Reduced diabetes
Increase lung capacity
Reduce cancer risk
Reduced Obesity
Bone density

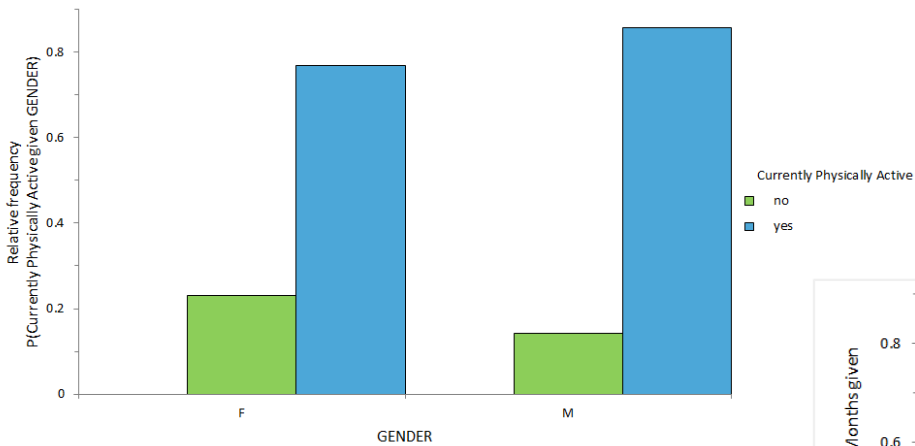
Reduced arthritic pain
Fall prevention
Reduced depression
Reduced stress
Increase strength
Increased flexibility
Reduce bowel transit time
Aesthetics

Patient attitudes NSLBP

Stages of Change for Physical Activity 2.1

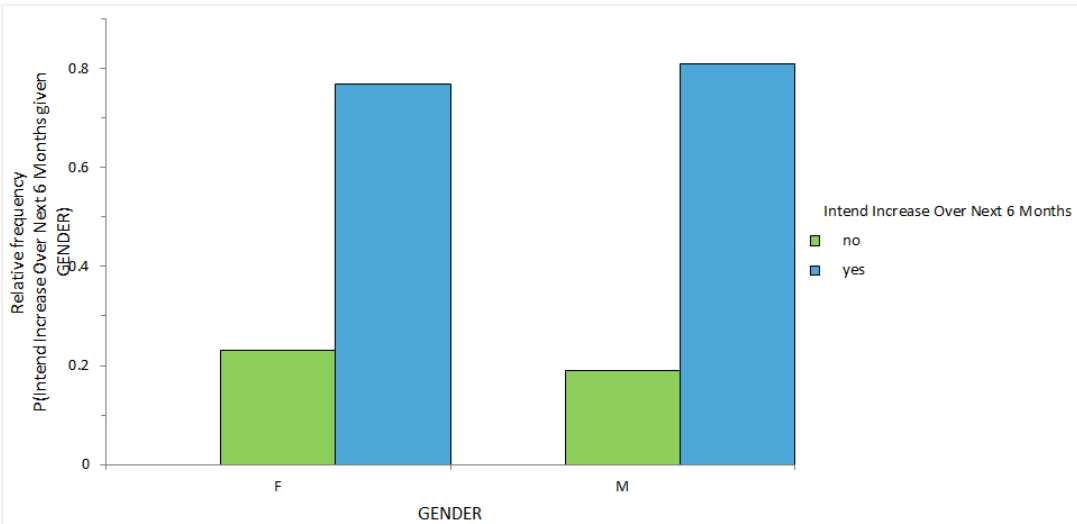
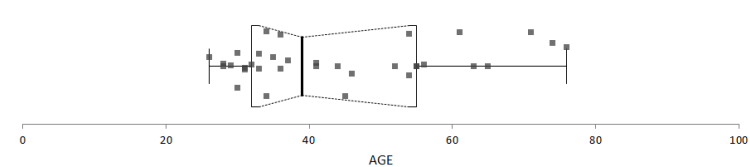
INSTRUCTIONS: For each question below, please circle **Yes** or **No**. Please be sure to follow the instructions carefully.

1) I am currently <u>physically active</u> .	No	Yes
2) I intend to become more <u>physically active</u> in the next six months.	No	Yes



For activity to be **regular**, it must add up to a total of **30 or more minutes per day**, and be done **at least five days per week**. For example, you could take a 30 minute walk or take three 10 minute walks each day.

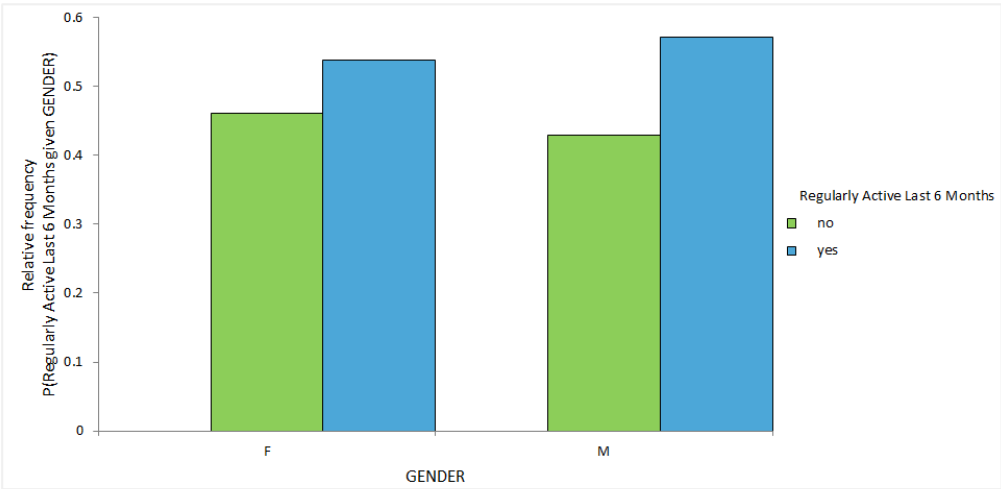
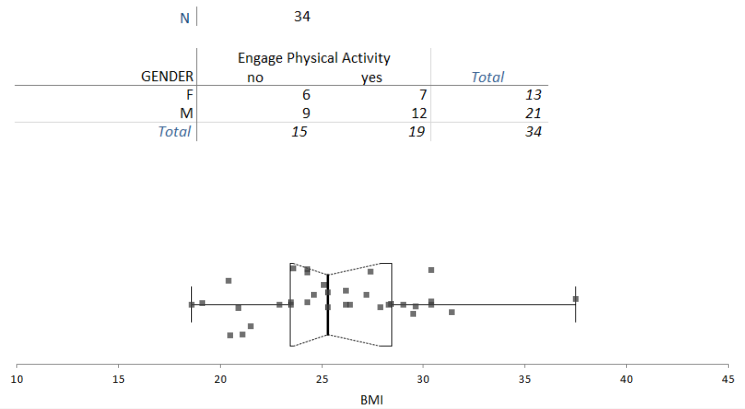
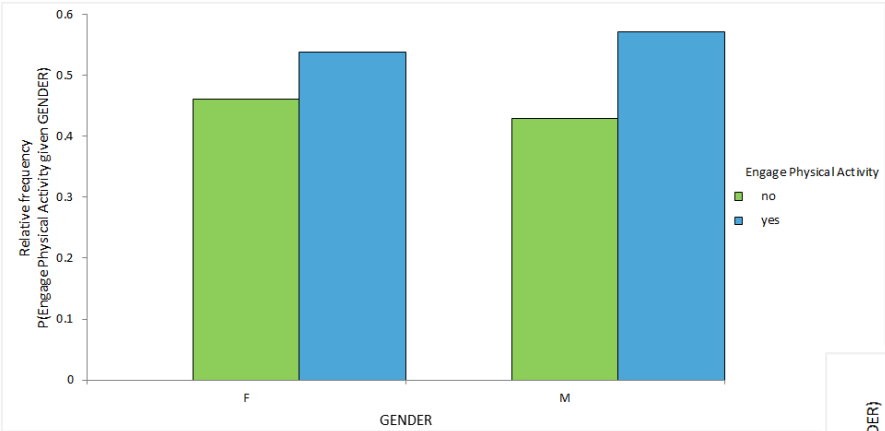
N 34			
GENDER	Currently Physically Active		Total
	no	yes	
F	3	10	13
M	3	18	21
Total	6	28	34



N 34			
GENDER	Intend Increase Over Next 6 Months		Total
	no	yes	
F	3	10	13
M	4	17	21
Total	7	27	34

Patient attitudes NSLBP

1) I currently engage in <u>regular physical activity</u> .	No	Yes
2) I have been <u>regularly physically active</u> for the past six months.	No	Yes



N		34		
		Regularly Active Last 6 Months		
	GENDER	no	yes	Total
	F	6	7	13
	M	9	12	21
	Total	15	19	34

Stages of Change for Physical Activity 2.1

Marcus, B.H., Banspach, S.W., Lefebvre, R.C., Rossi, J.S., Carleton, R.A., Abrams, D.B., 1992c, Using the Stages of Change Model to Increase the Adoption of Physical Activity Among Community Participants, *American Journal of Health Promotion*, 6(6), pp. 424-429

Practitioner's role

Do - facilitate activity uptake and adherence

Don't - trust patients to overcome barriers to exercise on their own !

Strategies to consider:

- include a personalised approach to exercise prescription
- environmental context and available resources
- personalised education about beneficial consequences of exercise
- reassurance about exercise capability
- use of reinforcement strategies



Practitioner's role



Work with the healing cycle

Recommended guidelines

Which is right?



75 Minutes per week

- Vigorous intensity
- (Breathing fast – difficulty talking)



150 Minutes per week

- Moderate intensity
- (Increased breathing – able to talk)



10,000 Steps

- 3 miles per hour
- (Increased breathing – able to talk)



500 Miles

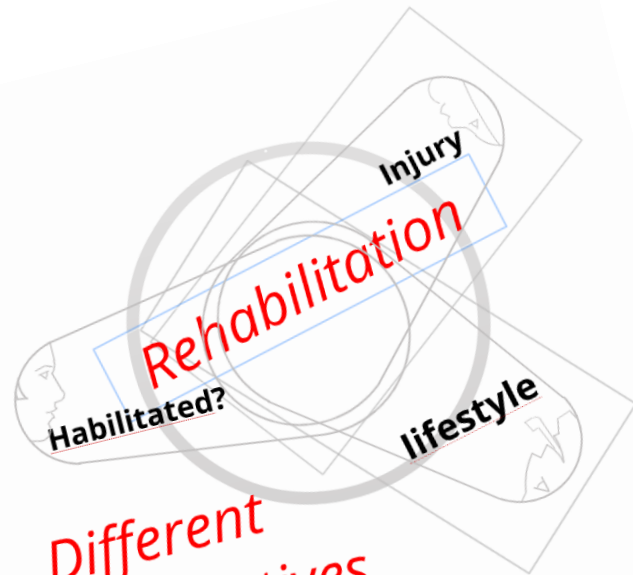
- MACH 1
- (Able to sing – preferably in a Scottish accent)



Combination approach

- All the above
- (2 or more days per week)

Prescription



**Different
perspectives**

Habilitation -

the process of supplying a person with the means to develop maximum independence in activities of daily living through training or treatment.

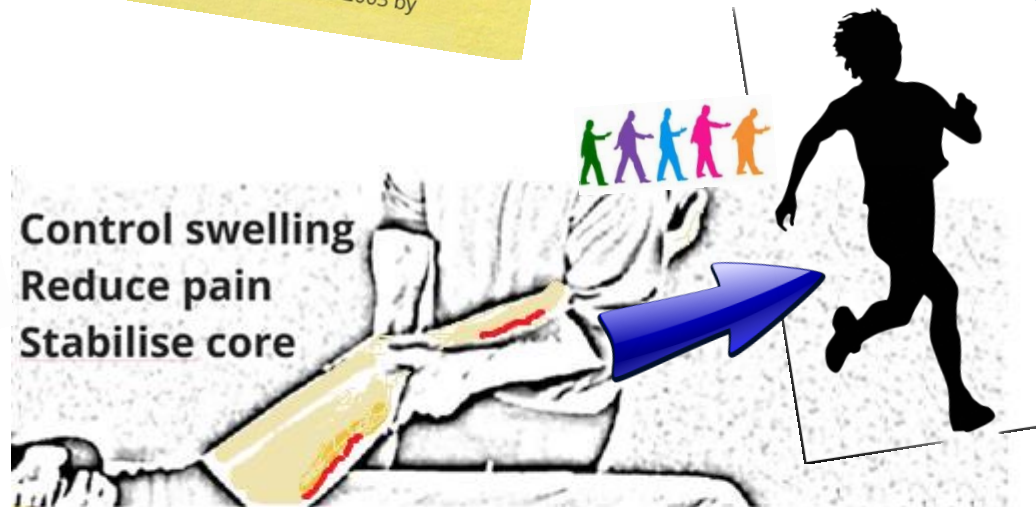
Mosby's Medical Dictionary, 8th edition. © 2009, Elsevier.

Rehabilitation -
the process of restoring a person's ability to live and work as normally as possible after a disabling injury or illness.

It aims to help the patient achieve maximum possible physical and psychologic fitness and regain the ability to be independent.

Prehabilitation - enhancing functional capacity in anticipation of a forthcoming debilitation (surgery etc)

Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. © 2003 by



Establish neuromuscular control

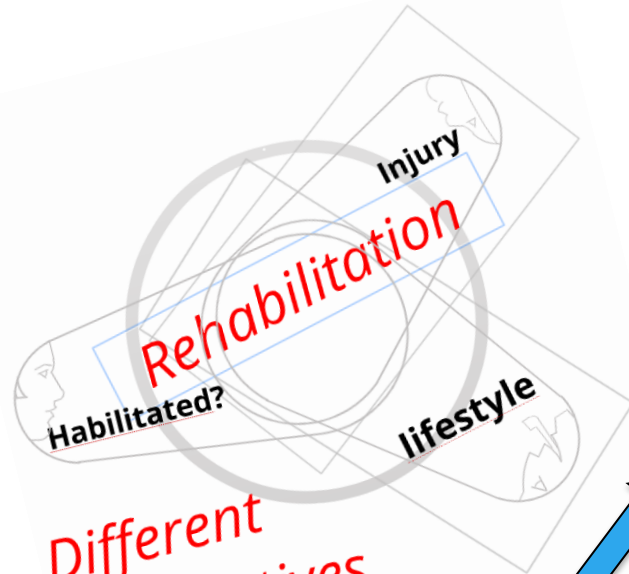
Improve postural stability

Restore full range of motion

Restore strength, endurance and power

Maintain cardiovascular fitness

Prescription



Different perspectives

Resistance training

Endurance	12 - 20>
Hypertrophy	6 - 12
Strength	<6
Power	1 - 3

SAID
principle

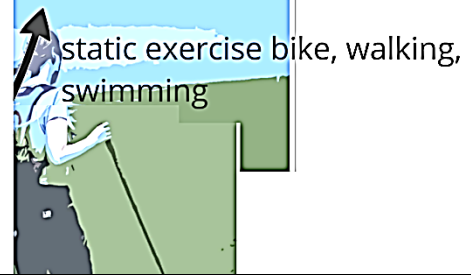
Specific
Adaptation
Imposed
Demands

Cross training

Circuits
Concentric
Eccentric
Dynamic
Interval

Maintain cardiovascular fitness

Design or substitute alternative activities to provide/maintain CV fitness as early as possible.....



Presenting Complaint

Expectations of the patient

Case history

Activity level

Nature of injury

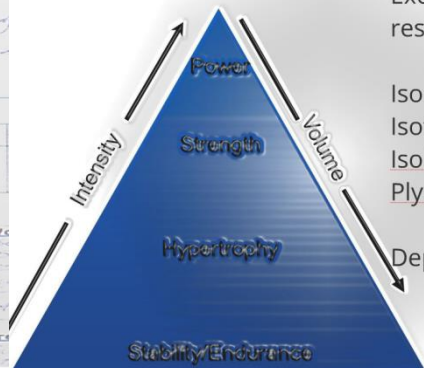
Benchmark

Surgery

Previous Inv

Diagrams of the human body showing various anatomical structures and measurements.

Restore strength, endurance and power



Exercises essential to restoring function:

- Isometric
- Isotonic
- Isokinetic
- Plyometric

Deployed progressively

Further considerations

High intensity interval training and moderate intensity exercise both reduce body fat percentage. HIIT provided 28.5% greater reductions in total absolute fat mass than MOD.

Viana RB, Naves JPA, Coswig VS, *et al*

Is interval training the magic bullet for fat loss? A systematic review and meta-analysis comparing moderate-intensity continuous training with high-intensity interval training (HIIT)

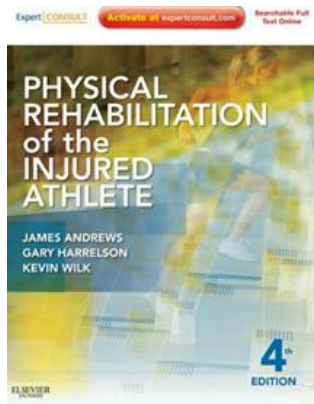
Br J Sports Med Published Online First: 14 February 2019. doi: 10.1136/bjsports-2018-099928

Increasing strength training volume and intensity associated with sports injury risk reduction.

Lauersen JB, Andersen TE, Andersen LB

Strength training as superior, dose-dependent and safe prevention of acute and overuse sports injuries: a systematic review, qualitative analysis and meta-analysis

Br J Sports Med 2018;**52**:1557-1563.



Exercise Progression Guidelines Based on Soreness

- If no soreness is present from the previous day's exercise, advance the level of exercise by modifying one variable.
- If soreness is present from the previous day's exercise but recedes with warm-up, stay at the same level.
- If soreness is present from the previous day's exercise but does not recede with warm-up, decrease exercise to the level before progression. Consider taking the day off if soreness is still present with the reduced level of exercise. When exercise is resumed, it should be at the reduced level.

Pragmatic prescription



Incidental Physical Activity - IPA

- The length of each IPA bout can vary from a 'short and sweet' few seconds
- Climbing a few flights of stairs 3–4 times a day
- Several minutes or even hours of active commuting, housework or shopping

IPA offers:

- Opportunities for brief episodes of vigorous intensity PA (VPA)
- Provides superior '*per time unit*' health benefits to moderate equivalent.



Presenting Complaint

Expectations of the patient

Case history

Activity level

Activity	Surgery	Previous Inv

Likely requires a preliminary level of strength and fitness

Stamatakis E, Johnson NA, Powell L, *et al*

Short and sporadic bouts in the 2018 US physical activity guidelines: is high-intensity incidental physical activity the new HIIT? *Br J Sports Med* Published Online First: 20 February 2019. doi: 10.1136/bjsports-2018-100397

Personalised approach

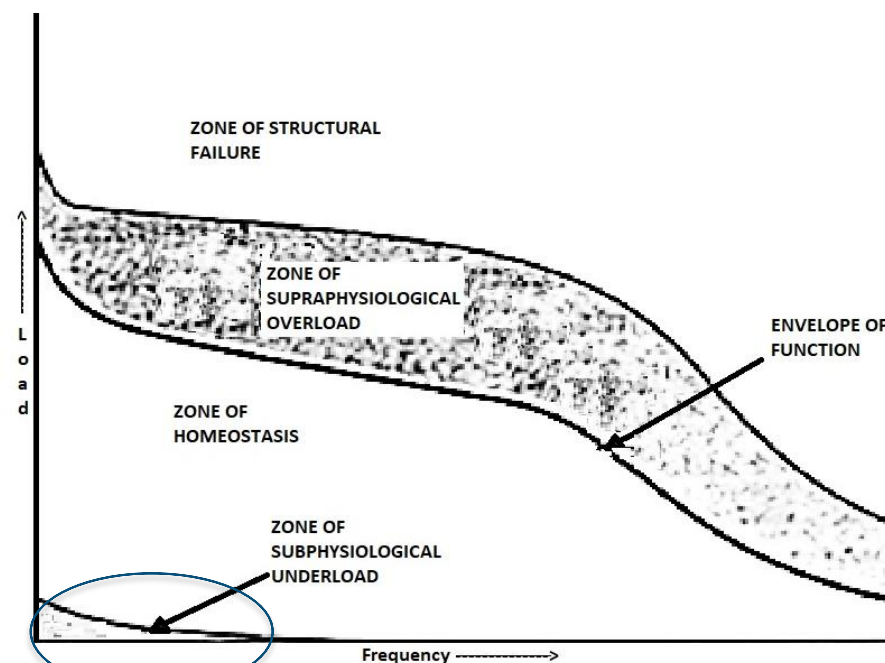
POLICE the patient - **protection, optimal loading**, ice compression and elevation

Patient considerations for doing nothing

- Immobilization of synovial joints - sequelae:
- compositional alterations of articular cartilage.
- decreased synthetic activity of chondrocytes.
- decreased proteoglycan content - reduced water content.
- biomechanical change - decreased cartilage stiffness/thickness.



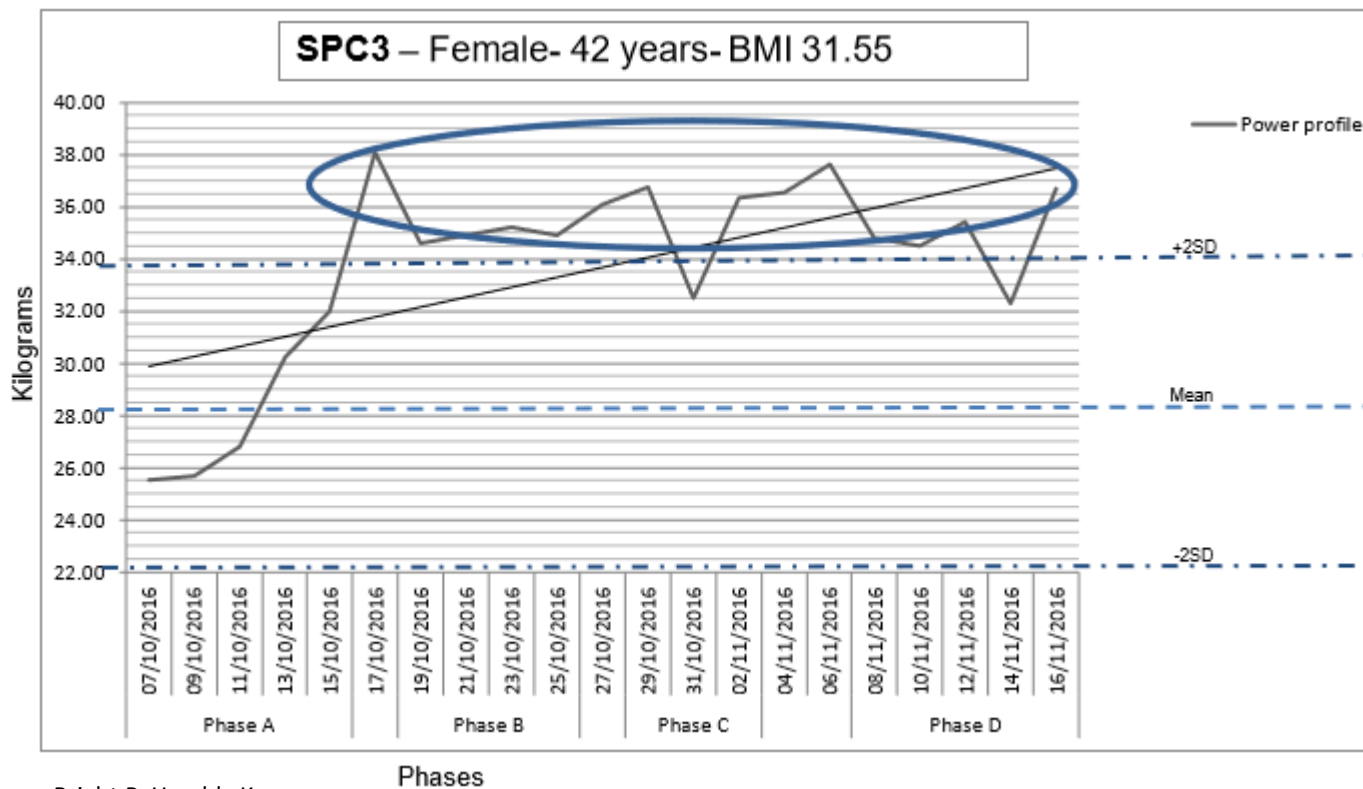
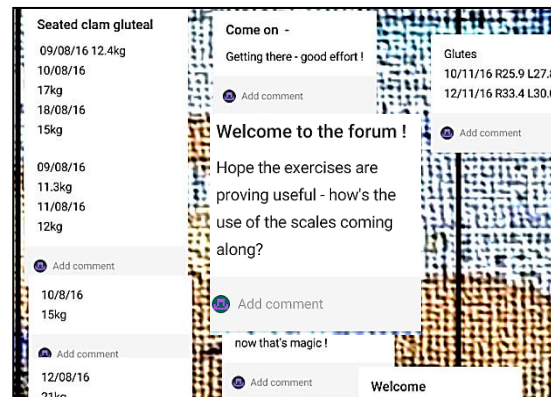
Envelope of Function



Hambly et al., 2006. Autologous chondrocyte implantation postoperative care and rehabilitation. *The American Journal of Sports Medicine*, Vol. 34, No. 6

Monitoring

Self-reporting through an online patient forum



Gluteal



Gluteal
Home exercise study
youtube

Bright P, Hambly K

Patients Using an Online Forum for Reporting Progress When Engaging With a Six-Week Exercise Program for Knee Conditioning: Feasibility Study

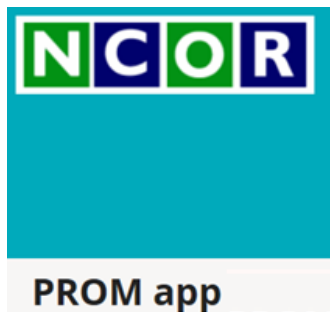
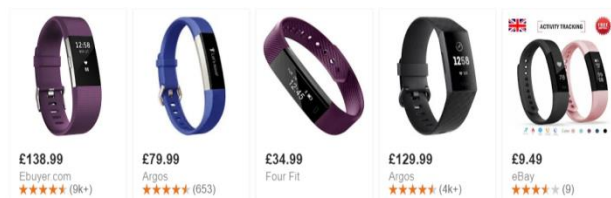
JMIR Rehabil Assist Technol 2018;5(1):e9

Monitoring



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Apps

Home Workout - No Leap Fitness Group	Female Fitness - W Leap Fitness Group	30 Day Fitness Cha Leap Fitness Group	7 Minute Workout Simple Design Ltd.	Calorie Counter - M MyFitnessPal, Inc.
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

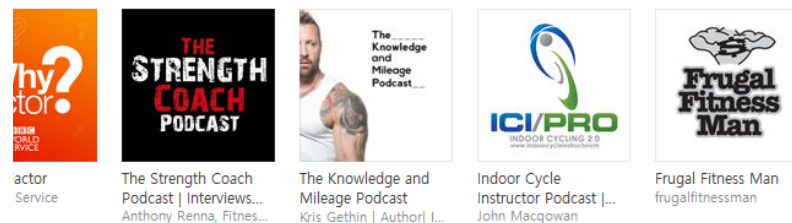
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Google Fit: Health Google LLC	Fitness & cmh1 app	Pro Gym Workout (C FitCraft Technologies	PRO Fitness VGFIT LLC	Six Pack in 30 Days Leap Fitness Group	eGym Fitness app eGym	JEFIT Workout Trac Jefit Inc.
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

ManFIT - Muscle b Health Group: Fitness, E	Exerprise - Workout Anabolic Aliens	HiFit - Abs & Butt Health Group: Fitness, E	FitNotes - Gym Wor James Gay	7-Minute Workouts despDev
★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

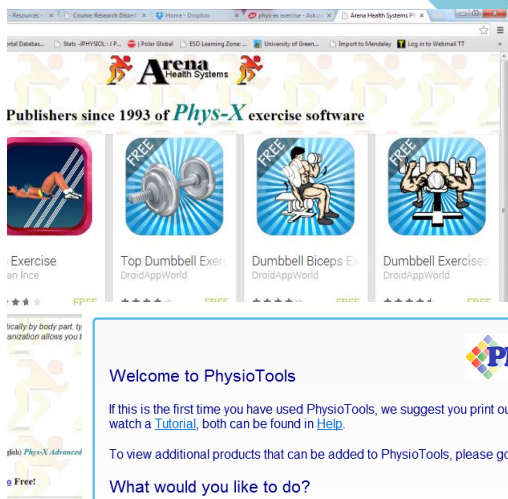
Fitness Pro	The best apps and gadgets for crushing it in life with...
Ru Anderson	Tony Wrighton

ts



The Strength Coach Podcast | Interviews with the Top Strength Coaches, Fitness Pros,...
The Strength Coach Podcast | Interviews with the Top Strength Coaches, Fitness Pros,...
Mind Pump: Raw Fitness Truth
Personal Trainer Podcast | Online Trainers Podcast | Fitness Pro
Fitness Made Simple
Personal Trainer Podcast | Online Trainers Podcast | Fitness Pro
Zestology: Live with energy, vitality and motivation

Resources



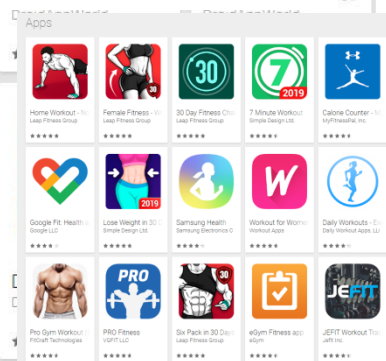
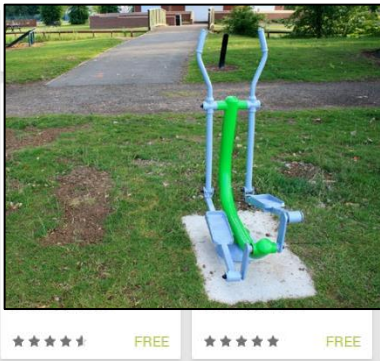
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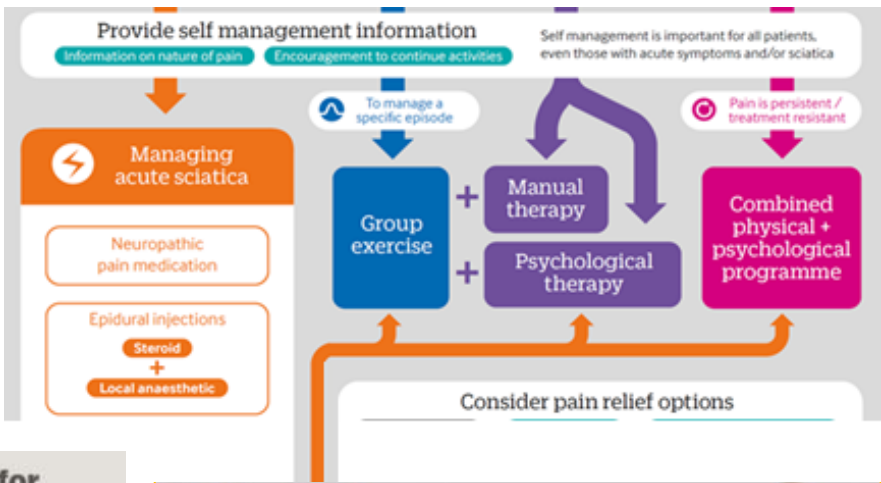
What would you like to do?

- [add or select client](#)
- [create handout](#)
- [edit unsaved exercise set](#)
- [edit password & settings](#)



Resources

Infographics –
Consider learning styles



Physical activity benefits for adults and older adults

BENEFITS HEALTH	REDUCES YOUR CHANCE OF
IMPROVES SLEEP	Type II Diabetes -40%
MAINTAINS HEALTHY WEIGHT	Cardiovascular Disease -35%
MANAGES STRESS	Falls, Depression and Dementia -30%
IMPROVES QUALITY OF LIFE	Joint and Back Pain -25%
	Cancers (Colon and Breast) -20%

What should you do?

For a healthy heart and mind	To keep your muscles, bones and joints strong	To reduce your chance of falls
Be Active	Sit Less	Build Strength
Improve Balance		

VIGOROUS (HEARTBEAT RACING, SWEATY, BREATHLESS)

- Run
- Sport
- Stairs

MODERATE (HEARTBEAT INCREASED, ABLE TO TALK)

- Walk
- Cycle
- Swim

TV (X), **SOFA** (X), **COMPUTER** (X)

GYM, **DANCE**, **YOGA**, **TAI CHI**, **CARRY BAGS**, **BOWLS**

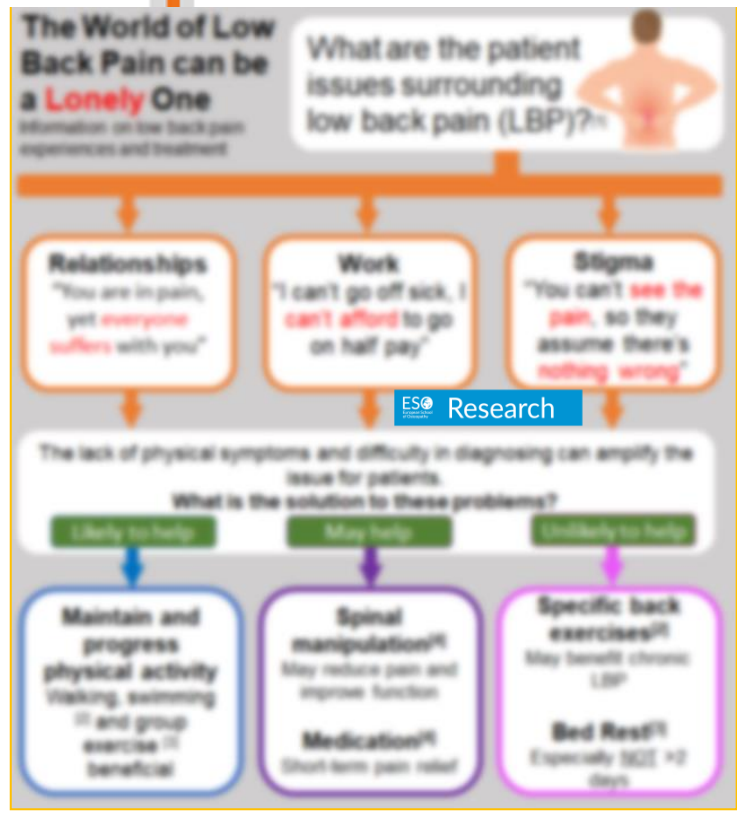
MINUTES PER WEEK
75 OR 150

BREAK UP SITTING TIME

2 DAYS PER WEEK

Something is better than nothing.
Start small and build up gradually; just 10 minutes at a time provides benefit.
MAKE A START TODAY: it's never too late!

UK Chief Medical Officers' Guidelines 2011 Start Active, Stay Active: <http://bit.ly/startactive>



thebmj Read the full article online <http://bmj.co/lbpNICE>

One Hour of Physical Activity Eliminates the Detrimental Effects of 8 Hours of Inactivity
Reference: by UK Ireland et al. The Lancet 2016
Designed by @YEMSportScience

8 HOURS

60-75 min of moderate intensity physical activity per day seem to eliminate the increased mortality risks associated with high total sitting time

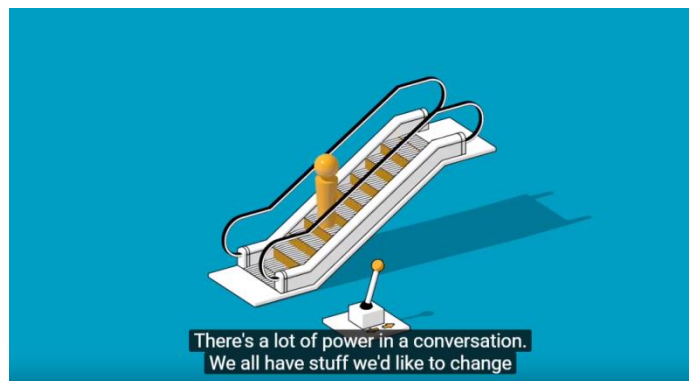
1 HOUR

The conclusions of this meta-analysis were drawn from data collected on more than 1 million men and women

Sitting for more than 8 h/day and with no additional physical activity is similar to that of smoking and obesity in terms of mortality risk

If long periods of sitting time each day are unavoidable (eg, for work or transport), it is important also to be physically active

Resources

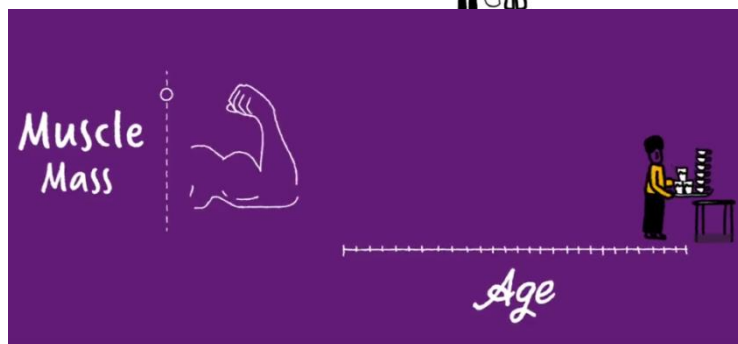


The power of a conversation:
https://youtu.be/dw41yl_txKU

Love activity, Hate exercise?:
<https://youtu.be/xCrOFsDFwOI>

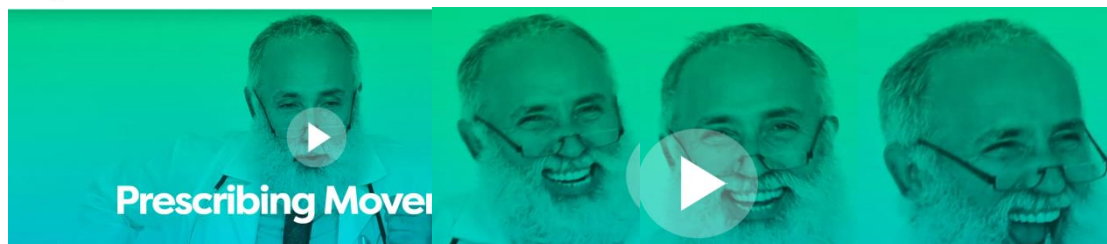
EFFORT
+
EXERCISE
=
BETTER HEALTH

OPD Never Too Late:
<https://youtu.be/5EAZDMZSNUA>



Prescribing movement Learning resource About Promotional Materials

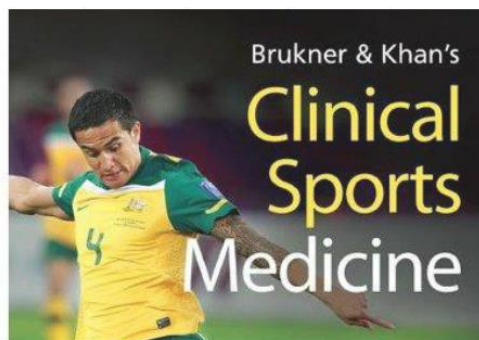
Moving medicine:
<https://movingmedicine.ac.uk/>



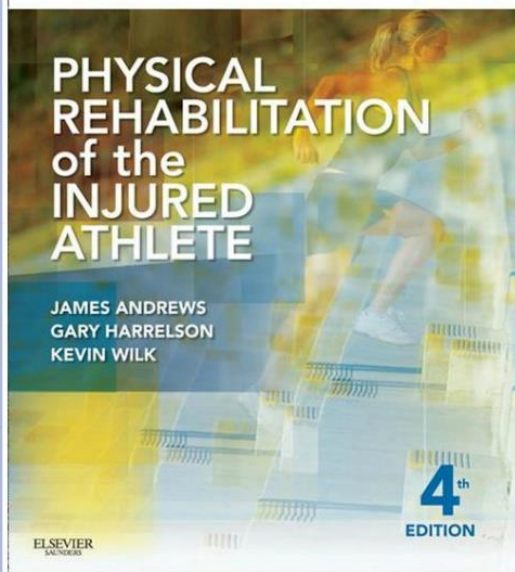
Will patients thank you?

EFFORT
+
EXERCISE
=
BETTER HEALTH

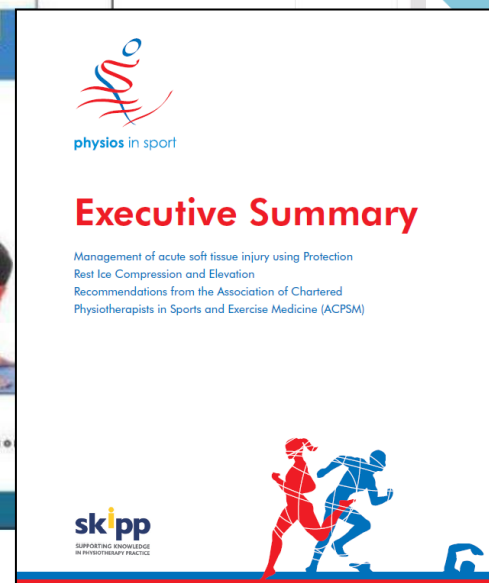
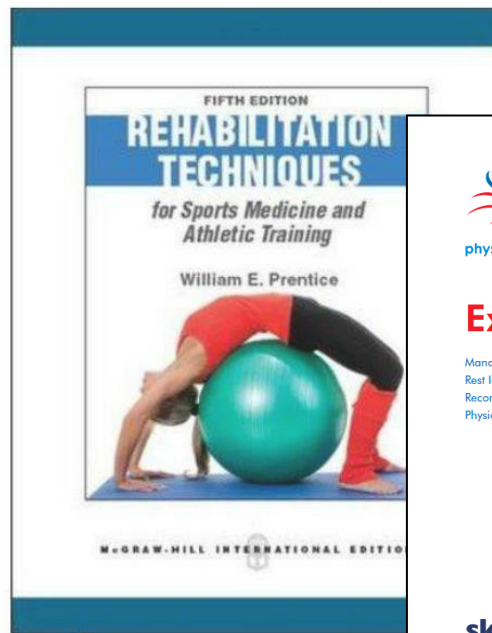
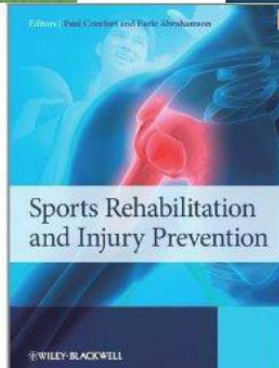




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Additional References