

SportsMed Update

Volume 8 (10) 1:2008

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In a well controlled laboratory study, using an animal model, low intensity pulsed ultrasound treatment improved healing of an acutely injured patella tendon if applied on day 1 of the injury for 2 weeks – prolonged treatment negatively affected tendon healing

Title: Low-intensity pulsed ultrasound on tendon healing. A study of the effect of treatment, duration and treatment initiation

Authors: Fu S-C, Shum W-T, Hung L-K, Wong M W-N, Qin L, Chan K-M

Reference: Am J Sports Med 36(9): 1742-1749

Type of study: Controlled laboratory study

Keywords: knee, injury, patella, tendon, ultrasound, healing, histology, biomechanics

EB Rating: 8/10

CI Rating: 8/10

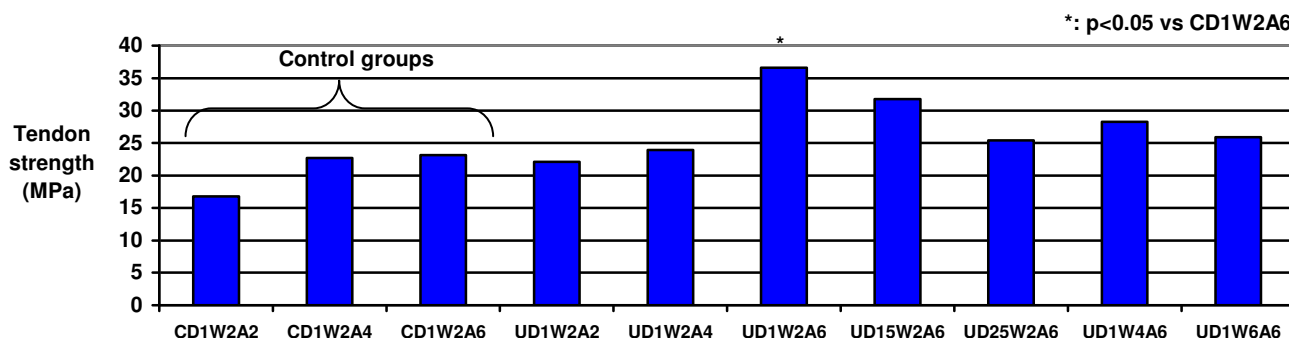
Background: There is some clinical and laboratory evidence that low-intensity pulsed ultrasound (LIPU) promotes healing of injured connective tissue including tendons – the timing and duration of LIPU does require further study

Research question/s: What is the effect of different timing after injury and duration of treatment using low-intensity pulsed ultrasound on healing and biomechanical properties of the patella tendon in an experimental animal model?

Methodology:

- Laboratory animal material: 60 Sprague-Dawley rats with a tendon injury (harvesting the central third of the patellar tendon)
- Experimental procedure: Following the tendon injury laboratory animals were divided into 10 groups according to treatment (C=control, U=ultrasound), onset of treatment (D1=day 1, D15=day 15, D29=day 29), duration of treatment (W2=2 weeks, W4=4 weeks, W6=6 weeks) and analysis of the tendon histology and biomechanical properties at harvesting (A2=2 weeks, A4=4 weeks, A6=6 weeks), as follows: three control groups - CD1W2A2, CD1W2A4, CD1W2A6, seven active LIPU groups- UD1W2A2, UD1W2A4, UD1W2A6, UD15W2A6, UD25W2A6, UD1W4A6, UD1W6A6).
- Measures of outcome: Histological appearance, strength of tendon (ultimate strength MPa) at time of analysis

Main finding/s:



- Tendon strength: LIPU applied from day 1 after the injury significantly improved the mechanical strength of the healing tendons at 6 weeks compared with the matched control - there was no significant improvement in tendon strength if LIPU was applied at 15 or 29 days post injury, or if it was applied for longer than 2 weeks
- Histology: LIPU applied later in the healing altered remodeling and resulted in poor collagen fiber alignment

Conclusion/s:

- In a well controlled laboratory study, using an animal model, low intensity pulsed ultrasound treatment improved healing of an acutely injured patella tendon if applied on day 1 of the injury for 2 weeks – prolonged treatment negatively affected tendon healing

Methodological considerations:

Well-conducted study, application to the human model requires further study

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In a retrospective analysis, the seasonal incidence of concussion in rugby union was 3-23% with an incidence of 4-14% in school players, and 3-23% in adult players

Title: The comparative incidence of reported concussions presenting for follow-up management in South African rugby union

Authors: Shuttleworth-Edwards AB, Noakes TD, Radloff SE, Whitefield VJ, Clark SB, Roberts CO, Essack FB, Zoccola D, Boulind MJ, Case SE, Smith IP, Mitchell JLG

Reference: Clin J Sport Med 2008; 18(5): 403-409

Type of study: Retrospective case series

Keywords: head, injury, rugby, concussion, neuropsychological testing

EB Rating: 5.5/10

CI Rating: 7/10

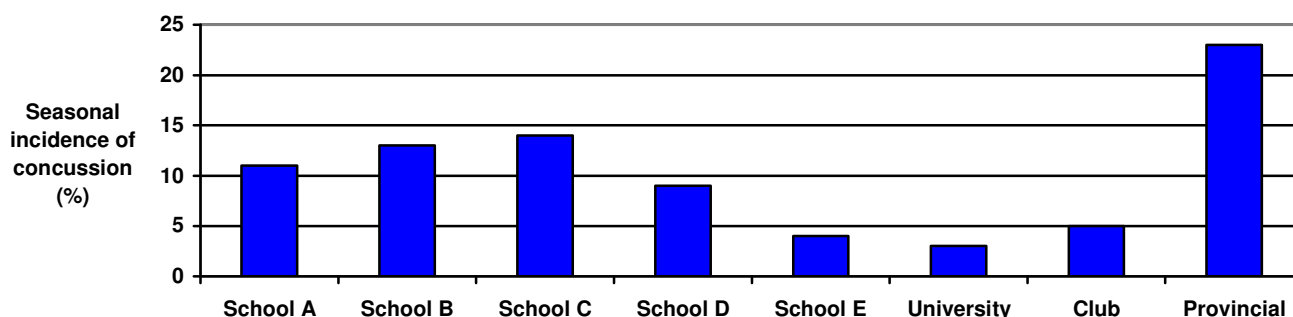
Background: Rugby union is a sport with a relatively high risk of concussive injury. Pre-season neuro-cognitive testing is frequently used in rugby teams.

Research question/s: What is the seasonal incidence of concussion incidence in school, university, club and provincial level Rugby Union players?

Methodology:

- Subjects: 1366 rugby union players (5 schools, 1 university, 1 club and 1 provincial group) who underwent baseline computerized neuropsychological assessment over a 4 year period
- Experimental procedure: Following baseline testing using a neuro-cognitive assessment (ImPACT) subjects who reported concussion during follow-up were included in an analysis of the seasonal incidence of occurrence of concussion. 175 concussive episodes were reported by 165 athletes. The management of the concussion varied considerably between the various groups (school A to E, club, university and provincial) (different psychologists and rugby organizations)
- Measures of outcome: Seasonal incidence (%) of concussion in the various groups

Main finding/s:



- The seasonal incidence of concussion in schools rugby was 4-14% and in adults was 3-23% - tighter control was associated with a relatively higher incidence of concussion

Conclusion/s:

- In a retrospective analysis, the seasonal incidence of concussion in rugby union was 3-23% with an incidence of 4-14% in school players, and 3-23% in adult players

Methodological considerations:

Retrospective case series, variation in the management of follow-up for concussion

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Biomechanical factors measured during landing and take-off in a spike-jump landing sequence are associated with a past history of patellar tendinopathy in volleyball players

Title: Are the take-off and landing phase dynamics of the volleyball spike jump related to patellar tendinopathy?

Authors: Bisseling RW, Hof AL, Bredeweg SW, Zwerver J, Mulder T

Reference: Br J Sports Med 2008; 42: 483-489

Type of study: Case-control study

Keywords: knee, injury, patella, tendinopathy, volleyball, biomechanics, jumping

EB Rating: 7/10

CI Rating: 7/10

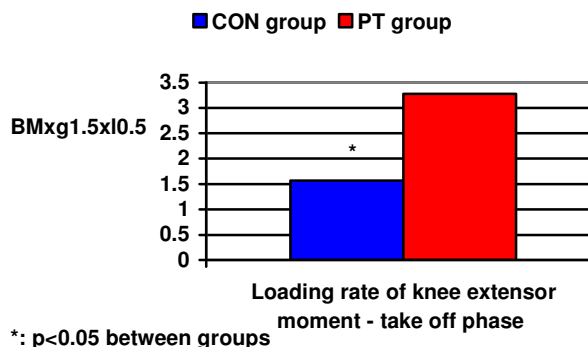
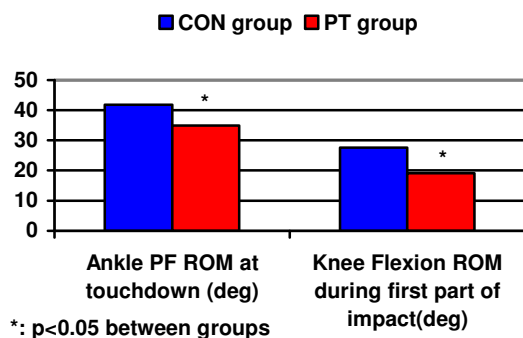
Background: Patella tendinopathy is a common injury in volleyball players. The relationship between biomechanical parameters in jumping may be related to this injury and deserve study

Research question/s: Are there differences in the ankle and knee joint dynamics during a volleyball spike jump in volleyball players with patella tendinopathy and uninjured players?

Methodology:

- Subjects: 14 volleyball players (Past history of patella tendinopathy (PT) group = 7, uninjured control (CON) group=7) with similar age, height, body mass, leg length, training hours per week and VISA score
- Experimental procedure: All the players performed spike jumps (5) in a biomechanics laboratory wearing their indoor shoes. Inverse dynamics were used to estimate ankle and knee joint dynamics. Multiple biomechanical variables were measured and a logistic regression was performed to determine the probability of the presence or absence of previous patellar tendinopathy among the volleyball players studied
- Measures of outcome: Kinematic and kinetic variables during jumping (take off and landing)

Main finding/s:



- The presence or absence of previous patellar tendinopathy were correctly predicted by 1) ankle and knee range of motion during the first part of impact, 2) loading rate of the knee extensor moment during the eccentric phases of take-off and landing, and 3) knee angular velocity during the eccentric phases of take-off and landing

Conclusion/s:

- Biomechanical factors measured during landing and take-off in a spike-jump landing sequence are associated with a past history of patellar tendinopathy in volleyball players

Methodological considerations:

Well conducted study, no cause effect can be determined, small sample size

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In young obese females, a short-term group education intervention that focused on physical activity alone resulted in improved cardiorespiratory fitness and attitudes to exercise, but did not alter body weight or quality of life parameters

Title: The effect of a physical activity education programme on physical activity, fitness, quality of life and attitudes to exercise in obese females

Authors: Quinn A, Doody C, O'Shea D

Reference: J Sci Med Sport 2008; 11: 469-472

Type of study: Case series

Keywords: physical activity, obesity, exercise, physical fitness, weight loss

EB Rating: 5/10

CI Rating: 7/10

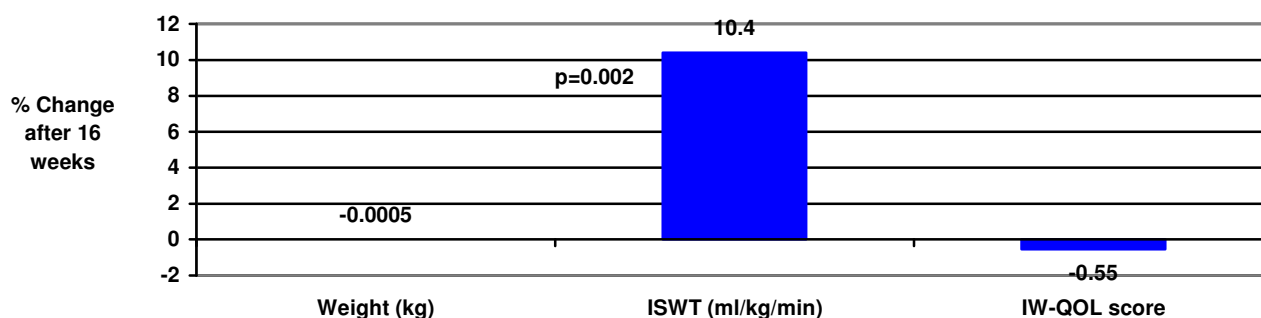
Background: The prevalence of obesity has increased and various interventions are being explored to reduce this problem

Research question/s: Does a physical activity group-based education programme improve weight, physical activity, cardiovascular fitness, quality of life and attitudes to exercise in obese females?

Methodology:

- Subjects: 18 obese females (37.6±10.7 yrs, BMI = 43.5±4.8)
- Experimental procedure: All the subject were assessed at baseline and after 16 weeks for 1) body weight, 2) cardiorespiratory fitness – CRF, using the Incremental Shuttle Walk test (ISWT), 3) physical activity (International Physical Activity Questionnaire-Short Form IPAQ-Short), 4) quality of life (Impact of Weight on Quality of Life Questionnaire-Short Form, IWQOL-Lite). All the subjects attended 4 physical activity education sessions (groups of 6–8, 1 month apart)
- Measures of outcome: Body weight, cardiorespiratory fitness (CRF), physical activity (IPAQ-Short), quality of life (IWQOL-Lite)

Main finding/s:



- Attitudes towards exercise: There were decreased barriers to exercise - decreased shyness (17%), increased energy (22%), increased enjoyment (22%)

Conclusion/s:

- In young obese females, a short-term group education intervention that focused on physical activity alone resulted in improved cardiorespiratory fitness and attitudes to exercise, but did not alter body weight or quality of life parameters

Methodological considerations:

No control group, short duration of program, and short-term follow up

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In a prospective cohort study in distance runners, the risk of benign prostatic hypertrophy was reduced in runners who ran greater weekly distances, and those who ran at faster running speeds – the risk was independent of BMI and diet

Title: Effects of running distance and performance on incident benign prostatic hyperplasia

Authors: Williams PT

Reference: Med Sci Sports Exerc 2008; 40(10): 1733-1739

Type of study: Prospective cohort study

Keywords: running, prostate gland, hypertrophy, lower urinary tract symptoms, prevention

EB Rating: 7.5/10

CI Rating: 8/10

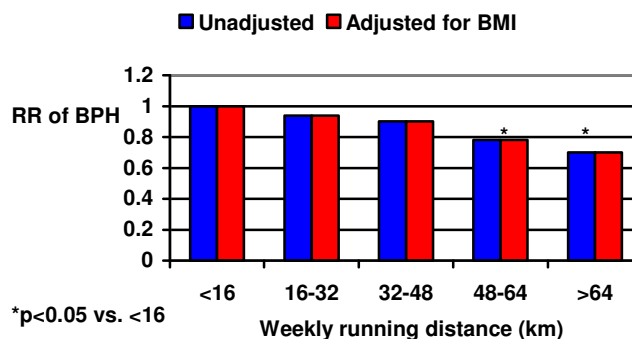
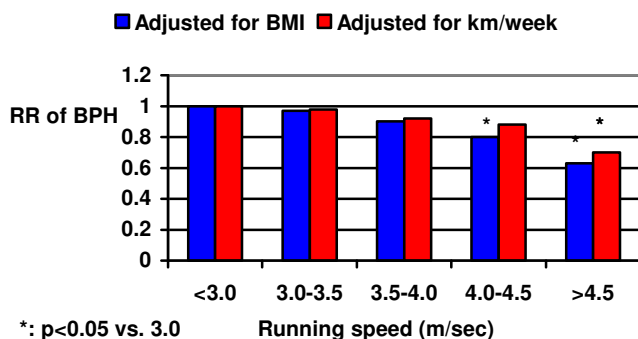
Background: Benign prostatic hyperplasia (BPH) is a common disorder in elderly males and it is generally considered as a disease that cannot be prevented

Research question/s: Is vigorous physical exercise (running) and physical fitness (10-km race performance) (an indicator of cardiorespiratory fitness) associated with benign prostatic hyperplasia (BPH)?

Methodology:

- Subjects: 28 612 males who were part of the National Runners Health Study (nonsmoking, non-vegetarian, non-diabetic)
- Experimental procedure: Subjects were recruited through a questionnaire survey from a runner's magazine subscription list. Questionnaire data included demographics, running history, lifestyle factors, past history of medical illness, nutrition and medication use. A follow-up questionnaire was administered about 7.74 ± 1.84 years later which included a question on newly physician-diagnosed BPH (self reported). 1899 men (6.64%) reported physician-diagnosed BPH during the follow-up
- Measures of outcome: Relative risk (RR) of BPH

Main finding/s:



- There was a significant lower risk of BPH in runners with both longer distance run and faster 10-km performance independent of age, BMI, and meat, fish, fruit, and alcohol intake

Conclusion/s:

- In a prospective cohort study in distance runners, the risk of benign prostatic hypertrophy was reduced in runners who ran greater weekly distances, and those who ran at faster running speeds – the risk was independent of BMI and diet

Methodological considerations:

Well conducted study, self-reported data

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