

SportsMed Update

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In rugby union, tackling is the most common mechanism of injury and the injury rate is higher in tacklers than in the ball carrier (being tackled) – tackle direction, tackle height and the speed of the tackler and the ball carrier are all factors that influence the injury rate

Title: Tackle injuries in professional rugby union

Authors: Quarrie KL, Hopkins WG

Reference: Am J Sports Med 2008; 36(9): 1705-1716

Type of study: Prospective epidemiological study

Keywords: injury, epidemiology, rugby union, tackling, risk factors

EB Rating: 7/10

CI Rating: 7.5/10

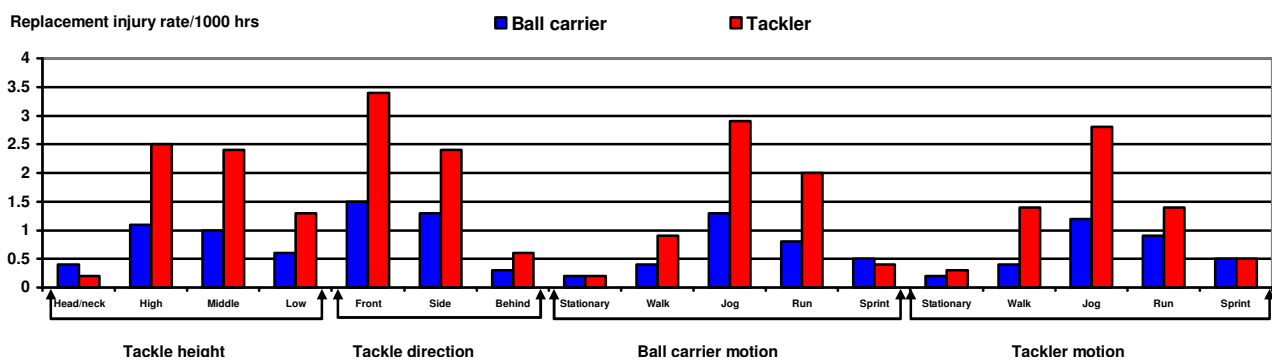
Background: It has been well documented that in rugby union, the tackle is the most common mechanism of injury – however, risk factors for tackle injuries have not been studied well

Research question/s: What is the injury risk that is associated with various characteristics of the tackle phase in professional rugby union matches?

Methodology:

- Subjects: Rugby union players participating in 434 professional matches (selected by convenience sampling)
- Experimental procedure: Video analysis of all 140 249 tackles that took place in the professional matches was the main methodology employed in this study. The following aspects of each tackle were assessed: height and direction of tackle on the ball carrier, speed of the tackler, speed of ball carrier. 1348 injuries were assessed through the video analysis and were cross-linked to a national injury database for 281 injuries. The characteristics of injuries were recorded, including whether the tackler or ball carrier was replaced (replacement injury) or only required an on-field assessment
- Measures of outcome: tackle event characteristics (number of tacklers, tackle height, tackle direction, carrier motion, tackler motion) and replacement injury rate (per 1000 hrs) to ball carriers and tacklers

Main finding/s:



- Injuries to tacklers were more common than injuries to the ball carrier
- Injury rates were higher in high and middle tackle heights, and front and side tackle directions
- Jogging and running were associated with higher injury rates in tacklers and ball carriers
- The head was the most common site of injury

Conclusion/s:

- In rugby union, tackling is the most common mechanism of injury and the injury rate is higher in tacklers than in the ball carrier (being tackled) – tackle direction, tackle height and the speed of the tackler and the ball carrier are all factors that influence the injury rate

Methodological considerations:

Well conducted study, injury information was obtained retrospectively and in selected players only

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Injuries associated with rock-climbing are common (about 50% per year) and occur mostly in the upper limb - climbing frequency as well as technical difficulties are risk factors for climbing injuries

Title: The epidemiology of rock-climbing injuries

Authors: Jones G, Asghar A, Llewellyn DJ

Reference: Br J Sports Med 2008; 42: 773-778

Type of study: Retrospective cross-sectional study

Keywords: injury, epidemiology, rock climbing

EB Rating: 6/10

CI Rating: 7/10

Background: Rock climbing is becoming a more popular sport, but it has an inherent risk for injuries – there are only a few epidemiological studies on rock climbing injuries

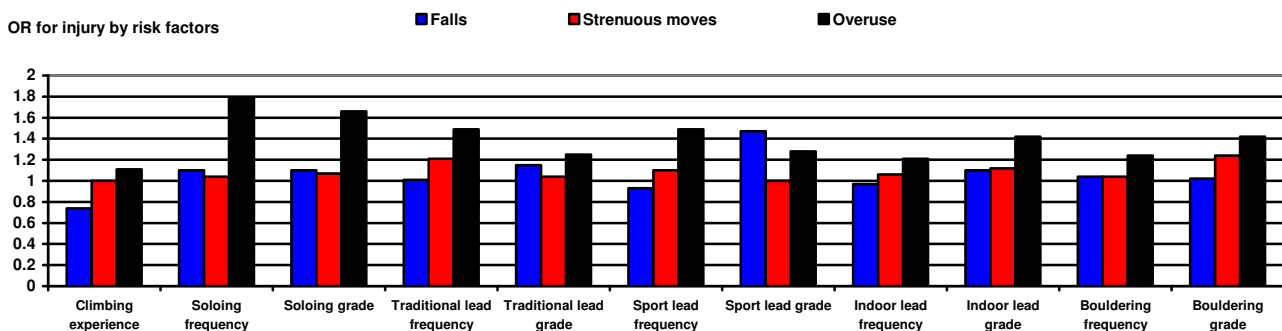
Research question/s: What is the prevalence and nature of rock-climbing injuries, and what are the factors associated with these injuries?

Methodology:

- Subjects: 201 active rock climbers (male=163 male, female=38, 16-62 yrs)
- Experimental procedure: All the subjects completed a questionnaire in which the frequency (injuries in last 12 months) and nature, site, mechanism (falls, overuse, strenuous moves) and treatment of injuries (defined as requiring medical attention or withdrawal from participation for ≥ 1 day) were documented
- Measures of outcome: Injuries (% in previous 12 months), mechanism, anatomical site (according to mechanism)

Main finding/s:

- Injury frequency: 50% of climbers reported >1 injury in the past 12 months (total of 275 injuries)
- Mechanism of injury: Acute injuries from falls accounted for 10% of all injuries whereas 33% were chronic overuse injuries, 28% were acute injuries caused by strenuous climbing moves
- Site of injury by mechanism: falling (ankle, hand/wrist, lower back), strenuous climb (finger, shoulder, elbow), overuse (finger, shoulder)



- Treatment sought by climbers: Physiotherapists (18%), other climbers (14%) and doctors (11%)

Conclusion/s:

- Injuries associated with rock-climbing are common (about 50% per year) and occur mostly in the upper limb - climbing frequency as well as technical difficulties are risk factors for climbing injuries

Methodological considerations:

Retrospective study, selection bias, recall bias, no diagnosis of injury

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In patients with chronic ankle instability, a 4-week balance training program (12 sessions) significantly improved self-reported function, static and dynamic postural control

Title: Balance training improves function and postural control in those with chronic ankle instability

Authors: Mckeon PO, Ingersoll CD, Kerrigan DC, Saliba E, Bennett BC, Hertel J

Reference: Med Sci Sports Exerc 2008;40 (10): 1810-1819

Type of study: Randomized, controlled, clinical trial

Keywords: ankle injury, ligament sprain, instability, balance, training, rehabilitation

EB Rating: 8/10

CI Rating: 7.5/10

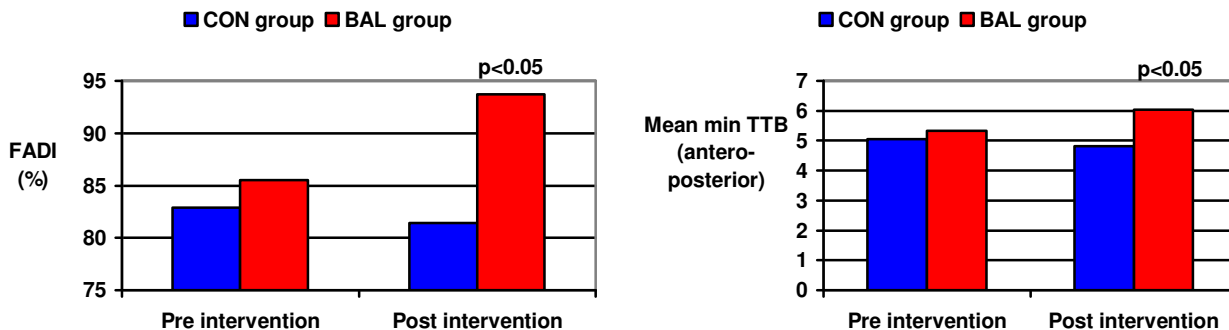
Background: Balance training is commonly prescribed for the treatment of ankle instability, yet there are few studies that have assessed the efficacy of balance training

Research question/s: Does a 4-week balance training program improve static and dynamic postural control and self-reported functional outcomes in patients with chronic ankle instability (CAI)?

Methodology:

- Subjects: 31 young adults (males=12) with chronic ankle instability (self-reported) CAI
- Experimental procedure: All the subjects were assessed for 1) function [Foot and Ankle Disability Index (FADI), FADI Sport scales], 2) static postural control [center of pressure - COP excursion measures, time-to-boundary - TTB measures in single-limb stance], and 3) dynamic postural control [Star Excursion Balance Test - SEBT]. Subjects were then randomly assigned to 4 weeks treatment receiving either supervised balance training (BAL=16, 12 X 20min sessions emphasizing dynamic stabilization in single-limb stance) or control treatment (CON=15, maintained the same level of activity) and were re-assessed after the 4 weeks treatment
- Measures of outcome: Function (FADI, FADI Sport scales - %), static posture (COP measures, time-to-boundary - TTB measures), and dynamic postural control (Star Excursion Balance Test - SEBT)

Main finding/s:



- In general, function, static and dynamic posture improved in the BAL group but not the CON group after 4 weeks

Conclusion/s:

- In patients with chronic ankle instability, a 4-week balance training program (12 sessions) significantly improved self-reported function, static and dynamic postural control

Methodological considerations:

Well conducted study

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Heart rate variability at rest and during aerobic exercise is different in healthy individuals compared with cardiac patients – this variable provides additional information about performance during exercise

Title: Analysis of heart rate variability at rest and during aerobic exercise: a study in healthy people and cardiac patients

Authors: de la Cruz Torres B, Lopez CL

Reference: Br J Sports Med 2008; 42: 715-720

Type of study: Case-control study

Keywords: heart rate, variability, cardiac disease, exercise

EB Rating: 7/10

CI Rating: 7/10

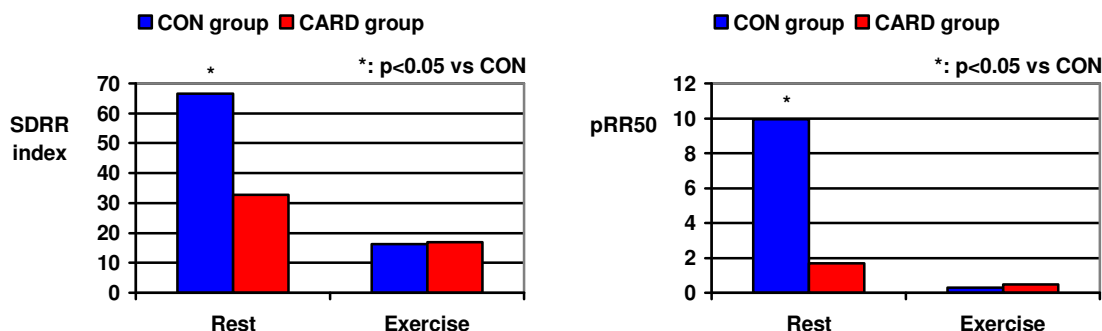
Background: Heart rate variability is a physiological measurement that is more frequently used in medical practice to assess cardiac function

Research question/s: Does heart rate variability (HRV) at rest differ in healthy people compared with patients who had an acute myocardial infarction (AMI) and does HRV change during aerobic exercise?

Methodology:

- Subjects: 20 subjects (10 healthy, active males - CON group, 10 cardiac patients - CARD group)
- Experimental procedure: All the subjects were assessed and then underwent testing for heart rate variability (recording the beat to beat heartbeat signal for 15 min) at rest and during 15 minutes of cycle ergometer exercise at 75% of maximal HR. Statistical parameters in the time domain were calculated as well as the spectral analysis applying the Fast Fourier Transform (FFT) and Poincare's graphic analysis (PGA)
- Measures of outcome: HRV (RR interval, standard deviation of RR intervals – SDRR, SDRR index, and % differences higher than 50 msec in RR intervals – pRR50) and PGA type

Main finding/s:



Conclusion/s:

- Heart rate variability at rest and during aerobic exercise is different in healthy individuals compared with cardiac patients – this variable provides additional information about performance during exercise

Methodological considerations:

Small sample size

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A 5-day, in-patient, Phase 1 cardiac rehabilitation program for patients awaiting CABG surgery effectively reduces hospital stay as well as the incidence of postoperative complications

Title: Pre- and postoperative cardiopulmonary rehabilitation in hospitalized patients undergoing coronary artery bypass surgery

Authors: Herdy AH, Marcchi PLB, Vila A, Tavares C, Collaco J, Niebauer J, Ribeiro JP

Reference: Am J Phys Med Rehabil 2008; 87(9): 714-719

Type of study: Randomized, controlled, clinical trial

Keywords: physical therapy, coronary artery disease, cardiac rehabilitation, atrial fibrillation, pulmonary complications

EB Rating: 7.5/10

CI Rating: 8/10

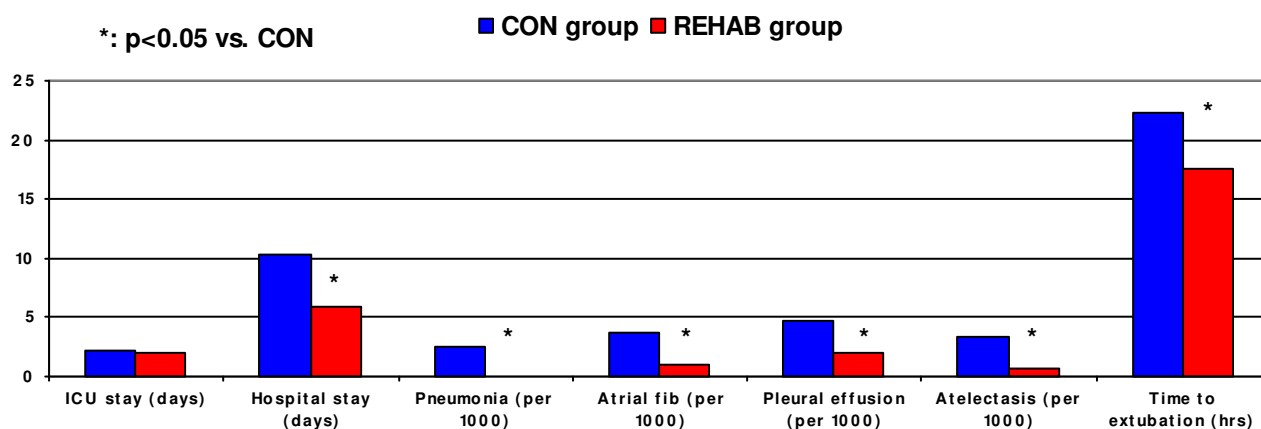
Background: Patients who have to wait in the hospital for coronary artery bypass surgery (CABG) are exposed to the potential risks of immobilization

Research question/s: Does an in-hospital cardiopulmonary rehabilitation program, performed before and after CABG, improve postoperative outcomes?

Methodology:

- Subjects: 56 patients who were scheduled to undergo coronary artery bypass graft (CABG) surgery
- Experimental procedure: Subjects were randomly assigned to either an in-patient cardiopulmonary rehabilitation program (REH=29, 61±10 yrs, male=69%, 5 days pre-operative phase I rehabilitation, including respiratory care, until discharge) or to usual care (CON=27, 58±9 yrs, male=74%)
- Measures of outcome: *Primary:* length of ICU, and in-hospital stay, % pneumonia, % atrial fibrillation; *Secondary:* % pleural effusion, % atelectasis, time to endotracheal extubation (min)

Main finding/s:



Conclusion/s:

- A 5-day, in-patient, Phase 1 cardiac rehabilitation program for patients awaiting CABG surgery effectively reduces hospital stay as well as the incidence of postoperative complications

Methodological considerations:

Small sample size, no longer term follow-up

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