

Prize Winning Abstracts BASEM Conference 2018

1 THE INTEGRITY OF THE SCAPHOLUNATE LIGAMENT IN COMPETITIVE DIVERS

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10.1136/bjsports-2019-BASEMAbs.1

Aim Wrist pain and injury is common condition in competitive, elite divers. Literature has shown that divers sustain high impacts of force through the wrists on water entry. It is likely this and the repetitive nature of the sport that results in wrist injuries.^{1, 2} No studies have yet looked at the structures injured when divers have wrist pain. This study was conducted to ascertain the demographics of the diving population within the United Kingdom at competitive level and how many of them experienced wrist pain. It was also used to investigate if one of the crucial stabilising ligaments in the wrist was disrupted, the scapholunate ligament (SLL).

Methods Data was collected at the British Diving Championships, 2018. 51 divers were eligible for inclusion and 43 divers took part. Two divers were excluded due to previous wrist surgery. Participants completed a questionnaire on diving career to date and wrist injuries. They then underwent wrist examination using Watson's test and ultrasound imaging of both SLL.

Results This study found that 78% of divers had disruption of one or both SLL. Of these, 65.9% had disruption of the ligament in the supporting hand rather than the entry hand. No significant difference was found between springboard and platform divers. Those divers who taped were found to reduce ligament disruption by 28 times over those who did not (OR 27.9, 95% CI 3.31 to 234, P=0.002). It was demonstrated that Watson's test has poor sensitivity and specificity, with reasonable predicted value.

Conclusion Springboard and Platform divers at a competitive level are at high risk of SLL disruption. The supporting hand is more at risk than the entry hand. Taping confers a significant reduction in risk of disruption and should be used to prevent injury. Watson's test is a poor clinical test in diagnosis of SLL disruption.

REFERENCES

- Harrison S, Cohen R, Cleary P, *et al.* A coupled biomechanical-smoothed particle hydrodynamics model for predicting the loading on the body during elite platform diving. *Appl Math Model* 2015;**40**:3812–31.
- Prien A, Mountjoy M, Miller J, *et al.* Injury and illness in aquatic sport: how high is the risk? A comparison of results from three FINA world championships. *Br J Sports Med* 2016;**51**:277–82.

2 THE INCIDENCE OF UNDIAGNOSED COELIAC DISEASE IN PATIENTS PRESENTING WITH STRESS FRACTURE TO A TERTIARY REFERRAL CENTRE

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10.1136/bjsports-2019-BASEMAbs.2

Aim Stress fracture aetiology is often multifactorial and laboratory blood tests (LBT) can unmask underlying metabolic bone

risk factors and disorders. Coeliac disease (CD) is associated with low bone mineral density and an increased risk of fractures.¹ In addition, there are rare reports of occult CD presenting with stress fractures.² Anti-tissue transglutaminase antibody (TTG) testing has a high sensitivity and specificity for CD and is used as a screening test.³ This report examines the incidence of undiagnosed CD in patients presenting with stress fractures to a Sport and Exercise Medicine (SEM) clinic. **Methods** A retrospective analysis of 100 consecutive patients with radiologically proven stress fractures presenting to a single tertiary NHS SEM clinic was performed. Age, gender, fracture site, co-morbidities, TTG result and subsequent investigations were examined. Records were reviewed to confirm LBT, including TTG, had been performed at the time of diagnosis.

Results Seventy patients (70%) were female and mean age was 37 years (range 18–69). Metatarsal (35%) and tibial (21%) fractures were most common. TTG was performed in 85 patients. Two patients were excluded due to pre-existing CD. Five patients (5/83 (6%), mean age 38 years (28–57), 80% female) had a positive TTG; three of whom had CD confirmed by endoscopic biopsy and two are awaiting investigation. Four patients with a positive TTG underwent dual energy X-ray absorptiometry, with osteopenia (T-Score between -1.0 and -2.5) found in 75% of cases, although only one had a Z-score less than -2.0.

Conclusion In this cohort, the incidence of undiagnosed CD was between 3.6% to 6%, with a prevalence between 5% to 7%, approximately 5-fold higher than UK population estimates. We recommend that TTG screening should be performed in all patients presenting with stress fractures to identify underlying CD. Further work is required to confirm this association and elucidate potential underlying mechanisms.

REFERENCES

- Heikkilä K, Pearce J, Mäki M, *et al.* Celiac disease and bone fractures: a systematic review and meta-analysis. *J Clin Endocrinol Metab* 2015;**100**(1):25–34.
- Gilbody J, Trevett M. Coeliac disease presenting with bilateral fibular stress fractures. *Foot Ankle Surg* 2009;**15**:96–100.
- Downey L, Houten R, Murch S, Longson D, Group GD. Recognition, assessment, and management of coeliac disease: summary of updated NICE guidance. *BMJ* 2015;**351**:h4513.

3 PLATELET RICH PLASMA FOR ACUTE ACHILLES TENDON RUPTURE: A DOUBLE-BLIND, MULTICENTRE, RANDOMISED, PLACEBO-CONTROLLED TRIAL

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10.1136/bjsports-2019-BASEMAbs.3

Aim Slow recovery and disability after Achilles tendon rupture are major challenges. Platelet Rich Plasma (PRP) is an autologous supraphysiological concentration of platelets from whole blood that has demonstrated positive cellular and physiological effects on healing in the laboratory and is widely used in musculoskeletal treatments. However, evidence from adequately powered, robust clinical trials is lacking. We aimed to determine the clinical efficacy of PRP for treatment of acute Achilles tendon rupture.

Methods 230 adults starting Achilles rupture non-surgical management within 12 days of injury were randomised to PRP injection or dry needle insertion to the rupture gap, under local anaesthetic. Participants were blinded to study treatment

and received standardised rehabilitation. Blinded outcome assessments were at 4, 7, 13, and 24 weeks. The primary outcome was muscle-tendon function assessed by work performed during the heel-rise endurance test (HRET), measured with the Limb Symmetry Index (LSI) (0–100%; 100% denotes full recovery) at 24 weeks. Secondary outcomes were the Achilles Tendon Rupture Score (ATRS), quality of life (SF-12), pain and goal attainment. The trial was prospectively registered.

Results Of 230 participants, 114 were allocated to PRP injection (103 received PRP), 116 were allocated to and received placebo. At 24 weeks, 201/230 (87%) completed the HRET and 214/230 (93%) completed patient reported outcomes. Participant characteristics between the groups were similar. There was no difference between groups at 24 weeks in LSI (mean difference = -4.373; 95% CI -11.217 to 2.471; $p=0.195$). There were no differences in the secondary outcomes and adverse event rates.

Conclusion This trial design and standardised PRP preparation secure the first robust clinical trial evidence for PRP in managing Achilles tendon rupture, and suggest that PRP offers no patient benefit. The use of PRP in soft tissue injuries must be questionable unless supported by equally robust evidence indicating positive outcomes.

4 RELATIONSHIP BETWEEN CHILDHOOD OVERWEIGHT/OBESITY INDICATORS AND VIGOROUS PHYSICAL ACTIVITY AMONG NHANSE III BOYS (8 TO 11 YEARS OLD): DIFFERENT INTERPRETATION BETWEEN BODY MASS INDEX AND SUBCUTANEOUS ADIPOSITY SIZE AND SHAPE

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10.1136/bjsports-2019-BASEMAbs.4

Aim The aim of this study was to investigate whether the relationship between BMI and vigorous physical activity (VPA) differs when both the overall and regional distribution of subcutaneous adiposity (SA) are considered as alternative fatness indicators of BMI.

Methods The sample data were obtained from the third National Health and Nutrition Examination Survey (NHANES III). Four skinfolds (triceps, subscapular, supraspinal, thigh), BMI, age, race/ethnicity, height, and VPA (i.e., times per week exercise made you sweat) data of 1,028 boys (8–11 yrs) were extracted. The overall and regional distribution of the four skinfolds were calculated into Subcutaneous Adiposity Size and Shape (SASS) variables based on the description provided in Healy and Tanner's method (1): transform all four skinfolds into logarithms, 2) calculate average (SA-size estimation), 3) calculate difference between the average and each log-transformed skinfold, 4) run principal component analysis (SA-shape estimation). The samples were categorized into three groups based on participants' VPA levels (very-active: $VPA > 5$ times, active: $2 < VPA < 4$ times, non-active: $VPA < 1$ time). Then, MANCOVA/ANCOVA (BMI) were conducted separately to ascertain whether the fatness indicators provide consistent interpretations of the relationship with VPA.

Results The MANCOVA showed significant interaction between the SASS and VPA ($p < 0.05$). The MANCOVA Bonferroni-adjustment results indicated that SA-size ($F(2,938) = 5.528$, $p < 0.005$; partial $\eta^2 = 0.012$) and subscapular-to-thigh SA-shape was significantly associated with VPA ($F(2,938) = 9.587$, $p < 0.0005$; partial $\eta^2 = 0.020$), but not triceps-

supraspinal SA-shape ($F(2,938) = 1.485$, $p = 0.227$; partial $\eta^2 = 0.003$). This means that the very active and active boys had significantly larger SA-size and larger thigh and smaller subscapular SA-shape than the non-active boys. The ANCOVA result showed no BMI difference between the VPA groups ($F(2,1024) = 1.296$, $p = 0.274$).

Conclusion It was concluded that the interpretations made via SASS and BMI when associated with VPA are different. Future studies need to further investigate whether tackling childhood obesity by focusing on BMI-based obesity is affective approach to reduce body fat.

REFERENCE

1. Healy MJR, Tanner JM. Size and shape in relation to growth and form. *Symp Zool Soc Lond* 1981;46:19–35.

5 THE MOTIVATORS AND BARRIERS TO PHYSICAL ACTIVITY IN PRIMARY PREVENTION OF CHRONIC DISEASE

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10.1136/bjsports-2019-BASEMAbs.5

Background Regular physical activity is protective against many chronic diseases. Despite this, 39% of adults in the UK are insufficiently active with an increased risk of chronic disease. Moving Medicine is an online resource developed by the FSEM to facilitate clinician-led conversations to reduce the risk of chronic disease through increased physical activity.

Aim This is the first review to categorise and understand the principle motivators for and barriers against physical activity, for the primary prevention of chronic disease. It has informed the development of a national Moving Medicine resource.

Methods A structured search of MEDLINE and OpenGrey, augmented by handsearching of reference lists and contents of key journals. Qualitative evidence was then synthesised thematically.

Results Thirteen papers were selected as being of good quality (structured interviews and focus groups rather than questionnaires) and relevant to the aims of this review. Motivators identified were grouped into: anticipated positive effects, support/encouragement, social aspects, environmental aspects, goal-setting, and the use of feedback. Barriers to physical activity were grouped into: time constraints, physical health problems, environmental aspects, cost and poor communication.

Building results into the resource The results of this review were presented to an expert panel of SEM doctors, GPs, nurses, physiotherapists, and patients. This multidisciplinary team then helped shape the primary prevention resource on the Moving Medicine website. See examples from the resource below.

Conclusion Good quality conversations on physical activity in healthcare require an understanding of the key motivators and barriers reported by patients. Combining this qualitative review with the knowledge, skills and the experience of a multidisciplinary expert panel has enabled the development of a unique patient-centred primary prevention resource. Delivering this information through MovingMedicine.ac.uk is a vital step in using these important findings to inform routine clinical practice across the NHS. This should facilitate an increase in the proportion of adults meeting recommended physical activity levels and therefore reduce the rates of chronic disease.