

MD (21.4% vs. 6.3%,  $p=0.084$ ) and DE (17.9 vs. 6.3%,  $p=0.162$ ) risk proportions were not significant.

The results provide evidence that exercise addiction and muscle dysmorphia, and associated health behaviors, are factors to consider when assessing risk of LEA.

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### SUCCESSFUL ISOLATION OF VIABLE STEM CELLS FROM CRYOPRESERVED MICROFRAGMENTED HUMAN ABDOMINAL ADIPOSE TISSUE FROM PATIENTS WITH KNEE OSTEOARTHRITIS

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**Introduction** Treatment of knee osteoarthritis with stem cells from microfragmented adipose tissue (AT) has shown promising results. Cryopreservation and biobanking of stem cells are important for research, treatment of aged patients, and for repetitive treatments. Our aim was, therefore, to investigate if viable stem cells could be isolated and expanded from cryopreserved microfragmented AT by two different isolation methods.

**Materials and Methods** Microfragmented abdominal AT from knee osteoarthritis patients was cryopreserved at  $-80^{\circ}\text{C}$  in cryoprotectant-medium containing 10% dimethyl sulfoxide. The samples were thawed for stem cell isolation by tissue explant culture (TEC) and enzymatic digestion (ED), respectively. Viability, population doublings, and doubling time were assessed by trypan blue staining. Cell type was investigated using flow cytometry. Osteogenic and adipogenic differentiation was assessed quantitatively by Alizarin-Red-S and Oil-Red-O staining, respectively. Statistical analysis was performed using paired t-tests.  $p$ -values  $<0.05$  were considered statistically significant.

**Results** Microfragmented AT from 7 patients was cryopreserved for a period of 46–150 days (mean (SD) 115.9 days (44.3 days)). Viable stem cells were successfully recovered and expanded from all patients using both isolation methods with no significant difference in viable population doublings or doubling time from passage 1 to 3 ( $p>0.05$ ). Stemness was verified by surface markers and osteogenic and adipogenic differentiation. More pericytes were present when using TEC (25% (24%)) compared to ED (2% (2%)) at passage 4 ( $p=0.04$ ).

**Conclusion** Viable stem cells can be isolated and expanded from cryopreserved microfragmented AT using both TEC and ED. TEC provides more clinically relevant pericytes than ED.

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### CONCUSSION INCIDENCE AMONGST YOUTH HANDBALL PLAYERS PARTICIPATING IN THE HEALTH AND PERFORMANCE PROMOTION IN YOUTH SPORT (HAPPY) RANDOMIZED CONTROLLED TRIAL

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**Introduction** Knowledge of concussion in handball is limited. The aim of this study is to determine the incidence of concussion in Danish youth community handball.

**Materials and Methods** 758 players aged 11–17 years were followed prospectively as a part of a randomized controlled trial. Handball playing hours and head traumas were monitored weekly by the Oslo Sport Trauma Research Center Health questionnaire (OSTRC-H2) and a concussion specific question over 21 weeks using the app Athlete Monitoring. Players reporting a head injury via the OSTRC-H2 questionnaire or answered yes to the concussion specific question underwent a standardized 5–10-Minute telephone interview within 1 week.

Cases of concussion was defined according to the Consensus in Sport Group. Handball playing hours was defined as time spend in handball training and match. Incidence is reported as cases per 1000 playing hours.

**Results** 44 cases of concussion were identified. Overall incidence of concussion was 0,94 per 1000 hours [95% CI; 0,68–1,26]. Female athletes sustained twice as many concussions than male athletes (incidence rate ratio (IRR) 2,20 [95% CI; 1,09–4,84]). Concussion happened 9 times more often during match compared to training (9,09 [95% CI; 4,72–18,25]). No statistically significant difference in IRR between age groups (U13/U15 vs. U17; IRR 1,48 [95% CI; 0,59–3,24]) was found.

**Conclusion** This is the first study reporting concussion incidence in youth handball. Incidence was higher amongst female handball players compared to males and in match versus training. No difference in concussion incidence was found between age groups.

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### DOES AN ACTIVITY MODIFICATION STRATEGY FOR ADOLESCENTS WITH PATELLOFEMORAL PAIN AND OSGOOD-SCHLATTER AFFECT SEDENTARY TIME? AN ANCILLARY ANALYSIS

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**Introduction** Two clinical trials tested a new management strategy for adolescents with Patellofemoral Pain (PFP) and Osgood-Schlatter Disease (OSD). The strategy consisted of activity modification (a 4-week break from sport followed by progressive return to sport), education, and exercises. This strategy appeared to improve self-reported symptoms and reduce vigorous physical activity, but it is unclear if this had detrimental effects on adolescents' sedentary behavior. The aim of this study was to investigate the changes in sedentary behavior during an activity modification management strategy for PFP and OSD.

**Materials and Methods** This ancillary analysis included data from two single arm trials of activity modification, education, and exercises of 177 adolescents' with PFP or OSD. ActiGraph GT3X+ measured physical activity and sedentary time before and during the trial (at four weeks follow-up)

when adolescents were instructed to modify sports participation. Data was only included if they had a valid week which consisted of at least 4 days with 10 hours of wear-time. Time spent in consecutive sedentary bouts of  $\geq 10$  minutes was used to calculate the average daily sedentary time.

**Results** Baseline sedentary time for adolescents with PFP and OSD were 344 ( $\pm 74$ ) and 349 ( $\pm 39$ ) min/day, respectively. For adolescents with PFP the mean change in sedentary time was 14 min/day (95% CI, -3 to 30min) and 8 min/day (95% CI, -7 to 24) for OSD during activity modification.

**Conclusion** A management strategy focusing on activity modification, education, and exercises was associated with none or only small changes in sedentary time.

## 92 GOOD SHORT-TERM EFFECT OF SELF-MANAGEMENT REHABILITATION IS ASSOCIATED WITH LONG-TERM SUCCESSFUL OUTCOME IN ADOLESCENTS WITH PATELLOFEMORAL PAIN AND OSGOOD-SCHLATTER

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**Introduction** Short-term self-reported changes may be more strongly associated with long-term prognosis as they describe a disease trajectory and not a state. This study aimed to investigate the association between Global Rating of Change (GROC) after 4 weeks and the outcome after 12 months among adolescents with non-traumatic knee pain (Patellofemoral Pain (PFP) or Osgood-Schlatter (OSD)).

**Material and Methods** We included data from two prospective clinical trials including adolescents (aged 10–14 years) with PFP (N=151) or OSD (N=51) who underwent a self-management rehabilitation programme including education and exercise. Primary outcome was a 7-point GROC ranging from “much improved” to “much worse”. Adolescents were considered to have a successful outcome if they reported being “much improved” or “improved”. Outcomes were collected after 4 weeks and 12 months.

**Results** Among adolescents with an unsuccessful outcome after 4 weeks (58% of all adolescents), 78% had a successful outcome after 12 months. Among those with a successful outcome after 4 weeks (42% of all adolescents), 94% had a successful outcome after 12 months. Having a successful outcome after 4 weeks increased the relative risk of a successful outcome after 12 months (relative risk 1.21 (95%CI: 1.07–1.38) and absolute risk difference: 16%.

**Conclusion** Self-reported improvement after 4-weeks of treatment is associated with better outcomes after 12 months. Importantly, despite no improvement after 4 weeks, a large proportion of adolescents between 10 and 14 years of age will report improvement after 12 months. This highlights the importance of following the rehabilitation programme irrespective of short-term improvements.

## 85 DO ADOLESCENTS WITH OSGOOD SCHLATTER DISPLAY NOCICLASTIC PAIN MANIFESTATIONS?

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**Background** Osgood Schlatter disease (OSD) is a commonly seen musculoskeletal pain condition in active adolescents. OSD is an overuse injury, where the underlying mechanism is considered to be nociceptive, but other mechanisms have not yet been considered. Therefore, this study investigates pain sensitivity and inhibition through the paradigm of exercise-induced hypoalgesia (EIH) in adolescents with OSD compared to controls.

**Methods** All adolescents went through a baseline assessment including clinical history, demographics and sport participation. Pain severity was rated (0–10) during a 45-second anterior knee pain provocation (AKPP) test. Pressure pain thresholds (PPTs) were assessed bilaterally at the quadriceps, tibialis anterior muscle, and the patella tendon before and after the EIH paradigm (a three-minute isometric wall squat exercise).

**Results** Forty-nine adolescents (27 OSD, 22 controls) were included. No differences in the EIH effect between OSD and controls were observed. EIH was detected in both groups, but only at the tendon with a 48 kPa (95%CI 14–82) increase in PPTs from before to after exercise. Controls had higher PPTs at the patellar tendon (mean difference 184kPa 95%CI 55–313), tibialis anterior (mean difference 139kPa 95%CI 24–254), and rectus femoris (mean difference 149 kPa 95%CI 33–265). Higher AKPP pain severity was associated with lower EIH at the tendon (Pearson correlation = 0.48;  $p = 0.011$ ) in participants with OSD.

**Conclusion** Adolescents with OSD display increased pain sensitivity locally, proximally, and distally but similar endogenous pain modulation compared to healthy controls. Greater severity appears to be associated with less efficient pain inhibition during the EIH paradigm.

## 93 10-YEAR PROGNOSIS OF ADOLESCENT KNEE PAIN – A PROSPECTIVE POPULATION-BASED COHORT STUDY

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**Introduction** Knee pain affects one in three adolescents. No studies have prospectively evaluated the long-term impact of knee pain in later life. The Adolescent Pain in Aalborg (APA