Prevalence of markers associated with RED-S in elite-level female football players

Dasa, M.S.1, Rosenvinge, J.H.1, Friborg, O.1, Pettersen, G.1, Torstveit, M.K.2, Kristoffersen, M.3, Sagen, J.V.4, Sundgot-Borgen, J.5

1. UiT - The Arctic University of Norway, 2. University of Agder, 3. Wester Norway University of Applied Sciences, 4. University of Bergen, 5. Norwegian School of Sports Science,

INTRODUCTION:
Relative Energy Deficiency in Sports (RED-S) is a syndrome which describes impairments of several bodily systems, which main etiology is low energy availability. RED-S may have severe consequences for both performance and health, and different markers are often used to assess the occurrence and severity of the phenomenon. Despite increasing awareness of the syndrome, few studies investigating direct measures of RED-S have been done in female football players. Therefore, the aim of this study was to investigate the prevalence of symptoms associated with RED-S in elite-level female football players

METHODS:
60 players (age 22.5 ± 3.7, height 169 ± 6.0 cm, weight 64.1 ± 6.3 kg, BMI 22.4 ± 1.7) from three different teams in the Norwegian premier (n =2) and first (n =1) division were included in the study. The clinical findings were scored dichotomous as positive (1 point) or negative (0 points) using cut off values from the literature, and point prevalence for each condition was also calculated (point prevalence = (number of cases)/(population size for assessment)) . The Criteria's included amenorrhea, RMR < 30.kcal FFM.kg-day,   4 on the EDE-Q 11, Thyroid stimulating hormone (TSH(, free triiodothyronine (ft3), Low density lipids (LDL), ferritin, time loss caused by sickness using the Oslo sport trauma research center questionnaire, bone mass density and previous history of stress fracture, giving a maximum score of 13.

RESULTS:
Preliminary results show that the cumulative percentage distribution of RED-S points was 30% (0 points), 33% (1 point), 17% (2 points), 17% (3 points) and 3% (4 points), respectively. For the individual RED-S markers, the prevalence was generally low ranging between 0 and 22 %. However, the prevalence of RMR < 30. kcal FFM.kg-day was 42%. There was a significant difference in RED-S points between individuals with low and normal energy availability (EA) calculated by RMR (P < 0.001) with a mean score of 2.0 ± 1.0 and 0.8 ± 0.9, respectively.

CONCLUSION:
The prevalence of symptoms described by the RED-S model were present in this cohort. Nevertheless, few players had high rates of accumulated RED-S points, supporting the notion that female football players may not be predisposed to development of RED-S, given the characteristics of the game. Further, the usage of RMR as a surrogate marker of LEA should be further explored, as it provides promising results.

Topic: **Health and Fitness**

Presentation   **Poster**

29434