

respectively). Those fibromyalgia women who lived alone were more actively commute than those who lived accompanied (OR: 4.7, 95%CI: 1.4-15.6,  $p=0.013$ ) and those who lived with both partner and children, only partner and or children (ORs: 4.3, 95%CI: 1.3-14.7,  $p=0.020$ ).

**Conclusion.** Fibromyalgia and control women showed a similar pattern of active commuting behaviours. Additionally, fibromyalgia patients without family demands were more active commuters than control women.

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### Underreporting of energy intake in an athlete adolescent population

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**Keywords:** Underreporters; swimmers; BMI; body fat; macronutrients

**Objective.** To assess the extent of under reporting (UR) in a group of adolescent swimmers (SWI) compared to normo-active adolescents (CON) and investigate associated variables for each group.

**Methods.** A total of 80 SWI (37 females;  $14.3 \pm 1.8$  y) and 60 CON (23 females;  $14.4 \pm 2.7$  y) were evaluated. Weight, height and waist circumference (WC) were measured and body mass index (BMI) was calculated. Percentage of body fat (BF%) was calculated with Slaughter equation. Socioeconomic status was registered with a questionnaire. Contribution of macronutrients to energy intake (EI) was registered by two 24hour dietary recalls. UR was identified according to the Goldberg criterion adapted to adolescents. Pearson correlations between UR and the mentioned variables were performed. Multiple linear regressions investigated the associations between UR and the correlated variables (BMI, %BF and WC separately included to avoid colinearity).

**Results.** Rates of UR were 19.6% and 2.9% in male and female CON respectively; and 24% and 23.3% in male and female SWI respectively, with significant differences between males and females CON and between SWI and CON females ( $p<0.05$ ). In male CON, BMI (0.37; CI 0.01, 0.11) and BF% (0.34; CI 0.00, 0.04) were positively related to UR and contribution of lipids to EI was negatively related to UR in BMI (-0.50; CI -0.05,-0.01), WC (-0.48; CI -0.05,-0.00) and BF% (-0.44, CI -0.05,-0.00) independent models. In male SWI, BMI (0.33; CI 0.00, 0.10) and WC (0.30; CI 0.00, 0.05) were positively related to UR. In female SWI, contribution of proteins to EI (0.41; CI 0.01, 0.06) was positively related to UR.

**Conclusion.** In female CON, the low percentage of UR makes difficult to draw conclusions. High BMI shows to be related to UR in males independently of physical activity level. However, athletes and CON show different dietary patterns when UR.

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### The influence of different playing surfaces on bone mineral density in pubertal soccer players

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**Keywords:** Soccer; Pitch; Artificial turf; Natural grass; Bone mass

**Introduction.** Soccer is one of the most practiced sports in the world. It is characterized by different actions such as changes of directions, starts, stops, jumps and kicks, so it has been defined as an osteogenic sport. Previous studies have demonstrated that soccer participation improves bone mineral density (BMD) in male children. However, the influence that different playing surfaces could have on bone properties has not been studied in depth. Therefore, the aim of this study was to evaluate BMD differences between male soccer players who train on different playing surfaces.

**Methods.** A total of 76 male soccer players ( $12.7 \pm 0.6$  y) participated in this study. They were divided into 4 groups depending on the type of surface they played on as follows: 18 soccer players who trained in natural turf (NT), 13 in natural non-grass turf (NGT), 27 in 2nd generation artificial turf (2AT) and 18 in 3rd generation artificial turf (3AT). BMD and lean mass were measured with Dual-energy X-ray absorptiometry. Multivariate analysis of covariance (MANCOVA) test using age, height, Tanner stage and subtotal body lean mass (whole body less the head) as covariates was used to analyze differences in BMD variables by playing surface.

**Results.** 3AT soccer players showed higher subtotal body, left leg, right leg and femoral neck BMD than players who trained in 2AT ( $p<0.05$ ). 3AT soccer players also showed higher right leg BMD than those training in NT ( $p<0.05$ ). Moreover femoral neck BMD was higher in 3AT soccer players than players who trained in NGT ( $p<0.05$ ). Others groups did not show differences between them ( $p>0.05$ ).

**Conclusions.** Soccer participation in 3AT might affect positively bone development during puberty. Despite these results, it would be necessary to analyze other variables, which could modify bone properties as calcium intake and the volume and type of soccer training.

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### Relationship between overall physical fitness and cardiovascular disease risk factors in Spanish pubertal soccer players

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**Keywords:** Soccer; Football; Body composition; Blood samples; Lipid profile; Health-related fitness; Fitness Index

**Introduction.** Soccer is a sport which involves different aspects of physical fitness such as aerobic endurance and sprint ability. It is characterized by a wide range of actions including sudden starts, jumps and continuous repositioning during relatively long periods. Health-related parameters have already been associated with individual fitness tests in adolescents, but an evaluation considering fitness as a multifactorial entity is still lacking. Therefore, the aim of this study was to compare cardiovascular health indicators between overall fitness levels in pubertal soccer players.

**Methods.** A total of 106 soccer players (76 males,  $12.7 \pm 0.6$  y) participated in this study. A Fitness Index (FI) was computed as the sum of the sex-specific Z-scores calculated from four fitness tests: handgrip strength, long-distance jump, 30-meters sprint and 20-meters shuttle-run test. Following a 10-hour fasting, blood samples were collected and cardiovascular disease markers were analyzed. Subtotal lean, fat and trunk fat masses were evaluated using dual-energy X-ray absorptiometry. Independent T-tests were applied to evaluate differences in cardiovascular parameters between participants in the lowest (Q4) and highest (Q1) quartiles of the FI.

**Results.** Fat mass percentages of subtotal whole body and trunk were significantly higher in Q4, while subtotal lean mass was lower among these participants than those in Q1 (all  $p < 0.05$ ). In addition, differences were also found in the lipid profile, with the Q4 group showing higher blood LDL level and lower values of blood HDL (both  $p < 0.05$ ). Fasting glucose levels did not differ significantly between both groups ( $p > 0.05$ ).

**Conclusions.** It can be concluded from our results that differences in cardiovascular health might be found in adolescent football players depending on their fitness levels. Further studies should focus on determining the contribution of each individual fitness parameter on the overall index.

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### Factores que influyen en la práctica de actividad física durante el recreo, un estudio cualitativo

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**Palabras clave:** Modelo socioecológico; Sedentarismo; Conducta en Salud; Educación en Salud; Entorno; Técnicas cualitativas

**Objetivo.** El principal objetivo del estudio es conocer las barreras, facilitadores y preferencias durante el recreo de los escolares de 9 a 11 años de edad de la provincia de Cuenca, España.

**Método.** Se diseñó un estudio cualitativo con una perspectiva fenomenológica siguiendo el modelo socioecológico. Se realizaron 14 grupos focales y dibujos individuales sobre el colegio a un total de 68 niños, 42 niñas y 26 niñas, de 4 y 5 de primaria que participan en el programa Movi2. Una vez transcritos los grupos focales, fueron analizados junto con los dibujos por tres investigadoras utilizando el software Atlas.ti 5.0

**Resultados.** Emergieron tres categorías de análisis: individual, entorno social y entorno físico. En el nivel individual, en su mayoría los niños y niñas son activos realizando actividad física espontánea y en grupo, destacando el fútbol como actividad predilecta. Los escolares que eligen actividades sedentarias son niñas y los niños que son malos jugadores. En el nivel social, se relacionan con sus compañeros de clase, comenzando ya la diferenciación por género, menos en el caso de los juegos tradicionales que son compartidos por niños y niñas. Los profesores sólo toman partido durante el recreo en la programación de deportes por cursos, siendo el fútbol el deporte más ofertado. En el nivel físico, manifiestan falta de materiales y de espacio para jugar, utilizando cualquier zona para desarrollar sus juegos.

**Conclusión.** Primera, las niñas muestran una mayor preferencia por actividades sedentarias evitando especialmente las actividades muy competitivas y agresivas. Segunda, el juego espontáneo más común es el fútbol. Los tipos de juegos que se realizan durante el recreo y los materiales necesarios para su práctica están orientados al fútbol, actividad preferida por los niños. Tercera, el rol que el profesor juega en el recreo influye en el tipo de actividades que los niños realizan.

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### Diferencias en la percepción de barreras en escolares granadinos de acuerdo a su nivel de motivación hacia el ejercicio físico

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**Palabras clave:** Ejercicio físico; Escolares; Motivación; Percepción de barreras; Educación Física

**Objetivo.** El objetivo principal del presente estudio fue comparar la percepción de barreras hacia la práctica de ejercicio físico de los escolares de acuerdo a su nivel de motivación hacia el ejercicio físico.

**Método.** Una muestra de 378 adolescentes granadinos, 205 varones y 173 mujeres, de 12-16 años de edad cumplimentaron la versión española de los cuestionarios Cuestionario de la Regulación de la Conducta en el Ejercicio (BREQ-3) y Autoinforme de Barreras para la Práctica de Ejercicio Físico.

**Resultados.** El análisis de conglomerados identificó a dos grupos: "Alta motivación hacia el ejercicio físico" ( $n = 222$ ) y "Moderada