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RESUMOS DE ARTIGOS DE FUTEBOL SELECIONADOS NO PUBMED DE ACESSO LIVRE NA ÍNTEGRA EM 2017

Nogueira M, Laiginhas R, Ramos J, Costa O. Injuries in Portuguese Amateur Youth Football Players: A Six Month Prospective Descriptive Study. *Acta Med Port.* 2017 Dec 29;30(12):840-847.

INTRODUCTION:

This study analyzed the incidence and characteristics of injuries sustained by amateur youth football players in Portugal during season 2015 - 2016.

MATERIAL AND METHODS:

This is an observational descriptive study. We analyzed Portuguese youth football players' injuries over six months of a season. A total of 529 players were divided according to their age in two groups (Under-17 and Under-19). Data on injuries were collected.

RESULTS:

Throughout all 62 062.0 hours of exposure recorded, 248 injuries were reported in 173 different players. The average incidence of injury was 3.87 (95% CI = 2.81; 4.94) per 1000 hours of football exposure. There was a significantly higher average incidence of injury during matches - 14.22 (95% CI = 10.35; 18.09) per 1000 hours of exposure - when compared to the average incidence of injury during training - 2.06 (95% CI = 1.22; 2.90) per 1000 hours of exposure. This significance was also observed when the comparison was made within each age group. A traumatic mechanism was involved in 76.6% of all the injuries, while overuse was reported in 12.9%. The most common type was the injury that affected muscles and tendons (52.8%). The body location most commonly affected by injuries was the thigh (24.6%).

DISCUSSION:

Even though it is essential a better characterization of Portuguese athletes of younger age groups such as those discussed in this study, the results of the studied population are in agreement with the existing literature. However, this study provides more information that may be important to better target the Portuguese athletes' training for injury prevention.

CONCLUSION:

This study provides descriptive data on injuries developed in a subpopulation of Portuguese amateur youth football players that could represent a focus for future prevention.

KEYWORDS:

Athletic Injuries; Incidence; Portugal; Soccer/injuries

<https://www.ncbi.nlm.nih.gov/pubmed/29364796>

Milanović Z¹, Sporiš G², James N³, Trajković N⁴, Ignjatović A⁵, Sarmento H⁶, Trecroci A⁷, Mendes BMB⁸. Physiological Demands, Morphological Characteristics, Physical Abilities and Injuries of Female Soccer Players. *J Hum Kinet.* 2017 Dec 28;60:77-83.

The popularity of female soccer is increasing as well as the number of females playing soccer. Similarly, over the last twenty or so years, research in soccer has increased significantly, but a large disparity exists in the volume of studies involving male and female players. As a consequence of this, female players remain less well understood compared to males. The purpose of the present narrative review was to describe morphological characteristics, physiological demands, physical abilities and injuries in female soccer players. Physiological demands are similar between men's and women's soccer, but competitive women's matches were characterized by nearly 33% less distance covered, although at higher intensity levels (maximum speeds greater than 15 km/h) than typically found in the men's game. Sub-elite female players also tended to run less at higher intensity levels at the end of both halves in comparison with elite female players. High intensity running is an important factor of success in soccer since many critical moments of the game occur under this condition. The ability to rapidly change direction also determined elite, sub-elite and amateur levels. The implementation of functional training, which focused on soccer-specific drills and plyometric exercises, to improve explosive power, may improve conditioning in female soccer players as well as decrease the risk of injuries which was 3-8 times higher in females compared to males. This review presents an in-depth overview of the most influential factors for determining success in female soccer.

KEYWORDS:

female athletes; match performance; women's soccer

<https://www.ncbi.nlm.nih.gov/pubmed/29339987>

Varley I¹, Lewin R¹, Needham R¹, Thorpe RT², Burbeary R³. Association between Match Activity Variables, Measures of Fatigue and Neuromuscular Performance Capacity Following Elite Competitive Soccer Matches. *J Hum Kinet.* 2017 Dec 28;60:93-99.

The aim of the study was to assess the relationships between match activity variables, subsequent fatigue and neuromuscular performance capacity in elite soccer players. Subjects (n = 10) were professional soccer players participating in the English Championships. Match activity variables and markers of fatigue status were measured before and following two matches. Creatine kinase (CK) and muscle soreness were measured at baseline, immediately following, as well as 40 and 64 h post-match. Countermovement jump performance and perceived ratings of wellness were measured at baseline, then 40 and 64 h post-match. Relationships were shown between CK and the total number of accelerations and decelerations immediately (r = 0.63; large), 40 h (r = 0.45; moderate) and 64 h post-match (r = 0.35; moderate) (p < 0.05). Relationships between CK and total sprint distance (r = 0.39; moderate) and the number of sprints (r = 0.35; moderate) 40 h post-match (p < 0.05) were observed. Furthermore, relationships were shown between the perceived rating of wellness and number of accelerations 40 (r = 0.52; large) and 64 h (r = 0.40; moderate) post-match, sprint distance 40 h post-match (r = 0.40; moderate) and the total number of sprints 40 h post-match (r = 0.51; large) (p < 0.05). The quantification of match activity variables, particularly the total number of accelerations and decelerations and the number of sprints, provides insights into the fatigue status in elite soccer players 40 and 64 h post-match.

KEYWORDS:

acceleration; creatine kinase; deceleration; exercise; recovery

<https://www.ncbi.nlm.nih.gov/pubmed/29339989>

Eniseler N¹, Şahan Ç¹, Özcan I¹, Dinler K¹. High-Intensity Small-Sided Games versus Repeated Sprint Training in Junior Soccer Players. *J Hum Kinet*. 2017 Dec 28;60:101-111.

The aim of this study was to compare the effects of high-intensity small-sided games training (SSGT) versus repeated-sprint training (RST) on repeated-sprint ability (RSA), soccer specific endurance performance and short passing ability among junior soccer players. The junior soccer players were recruited from of a professional team (age 16.9 ± 1.1 years). The tests included the repeated-shuttle-sprint ability test (RSSAT), Yo-Yo Intermittent Recovery Test level 1 (Yo-Yo IR1) and Loughborough Soccer Passing Test (LSPT). Nineteen participants were randomly assigned to either the small-sided games training (SSGTG) (n = 10) or repeated-sprint training group (RSTG) (n = 9). Small-sided games or repeated-sprint training were added to the regular training sessions for two days of the regular practice week. The Wilcoxon signed-rank and Mann-Whitney U tests were used to examine differences in groups and training effects. A time x training group effect was found in the improvement of short-passing ability for the small-sided games training group which showed significantly better scores than the repeated-sprint training group ($p \leq 0.05$). Both groups showed similar improvements in RSAdecrement ($p < 0.05$). Only the repeated-sprint training group improved in the Yo-Yo IR1 ($p < 0.05$). This study clearly shows that high-intensity small-sided games training can be used as an effective training mode to enhance both repeated sprint ability and short-passing ability.

KEYWORDS: passing ability; repeated-sprint ability; repeated-sprint training; small-sided games; soccer specific endurance

<https://www.ncbi.nlm.nih.gov/pubmed/29339990>

Aquino R^{1,2}, Alves IS³, Padilha MB¹, Casanova F¹, Puggina EF^{2,3}, Maia J¹. Multivariate Profiles of Selected versus Non-Selected Elite Youth Brazilian Soccer Players. *J Hum Kinet*. 2017 Dec 28;60:113-121.

This study determined whether a multivariate profile more effectively discriminated selected than non-selected elite youth Brazilian soccerplayers. This examination was carried out on 66 youth soccer players (selected, n = 28, mean age 16.3 ± 0.1 ; non-selected, n = 38, mean age 16.7 ± 0.4) using objective instruments. Multivariate profiles were assessed through anthropometric characteristics, biological maturation, tactical-technical skills, and motor performance. The Student's t-test identified that selected players exhibited significantly higher values for height (t = 2.331, p = 0.02), lean body mass (t = 2.441, p = 0.01), and maturity offset (t = 4.559, p < 0.001), as well as performed better in declarative tactical knowledge (t = 10.484, p < 0.001), shooting (t = 2.188, p = 0.03), dribbling (t = 5.914, p < 0.001), speed - 30 m (t = 8.304, p < 0.001), countermovement jump (t = 2.718, p = 0.008), and peak power tests (t = 2.454, p = 0.01). Forward stepwise discriminant function analysis showed that declarative tactical knowledge, running speed -30 m, maturity offset, dribbling, height, and peak power correctly classified 97% of the selected players. These findings may have implications for a highly efficient selection process with objective measures of youth players in soccer clubs.

KEYWORDS:

performance level; skill acquisition; sport selection; tactical analysis; youth athletes

<https://www.ncbi.nlm.nih.gov/pubmed/29339991>

Arslan E¹, Alemdaroglu U², Koklu Y², Hazir T³, Muniroglu S⁴, Karakoc B⁵. Effects of Passive and Active Rest on Physiological Responses and Time Motion Characteristics in Different Small Sided Soccer Games. *J Hum Kinet.* 2017 Dec 28;60:123-132.

The purpose of this study was to investigate the effects of resting regimes on physiological responses and time motion characteristics between bouts during small sided games (SSGs) in young soccer players. Sixteen players (average age 16.87 ± 0.34 years; body height 176.69 ± 3.21 cm; body mass 62.40 ± 2.59 kg; training experience 3.75 ± 0.44 years) performed four bouts 2-a-side, 3-a-side and 4-a-side games with three minutes active (SSGar: Running at 70% of HRmax) and passive (SSGpr) rest between bouts at two-day intervals. The heart rate (HR) along with total distance covered in different speed zones - walking (W, 0-6.9 km·h⁻¹), low-intensity running (LIR, 7.0-12.9 km·h⁻¹), moderate-intensity running (MIR, 13.0-17.9 km·h⁻¹) and high-intensity running (HIR, >18km·h⁻¹), were monitored during all SSGs, whereas the rating of perceived exertion (RPE, CR-20) and venous blood lactate (La-) were determined at the end of the last bout of each SSG. The results demonstrated that all SSGpr elicited significantly higher physiological responses compared to SSGar in terms of the RPE and La- ($p < 0.05$). In addition, 2-a-side SSGpr induced significantly lower %HRmax responses and total distance covered than 2-a-side SSGar ($p < 0.05$). Moreover, the distance covered at HIR was significantly higher in 4-a-side SSGar than 4-side SSGpr. The results of this study indicate that both SSGs with passive and active rest can be used for soccer specific aerobic endurance training. Furthermore, all SSGs with active recovery should be performed in order to increase players and teams' performance capacity for subsequent bouts.

KEYWORDS: game based training; physiological responses; time-motion characteristics; work rest ratio

<https://www.ncbi.nlm.nih.gov/pubmed/29339992>

Kubayi A¹, Paul Y¹, Mahlangu P¹, Toriola A¹. Physical Performance and Anthropometric Characteristics of Male South African University Soccer Players. *J Hum Kinet.* 2017 Dec 28;60:153-158.

Soccer is the most popular sport worldwide. Despite its global acclaim, scientific studies of soccer have tended to focus on tactics and techniques, thereby neglecting the physical and physiological profile of the players. Therefore, the purpose of this study was to examine physical and anthropometric characteristics of male South African university soccer players. Twenty-seven male soccer players aged 19 to 24 (mean age: 22.1 years; s = 1.5 years) volunteered to participate in the study. The results showed that goalkeepers (77.5 ± 9.7 kg) and defenders (68.2 ± 6.5 kg) were the heaviest compared to players in other playing positions. The goalkeepers also had the highest percentage of body fat ($11.3 \pm 2.3\%$), in contrast to midfielders who had the lowest body fat content ($9.1 \pm 0.9\%$). With regard to flexibility, defenders (45.1 ± 4.9 cm) and midfielders (45.9 ± 5.4 cm) performed better than goalkeepers (37.1 ± 4.3 cm) and strikers (40.1 ± 3.4 cm). Midfielders (57.2 ± 3.1 ml¹·kg⁻¹·min⁻¹) and defenders (56.1 ± 5.1 ml¹·kg⁻¹·min⁻¹) had significantly higher values of maximal oxygen uptake (VO_{2max}) than goalkeepers (47.9 ± 0.2 ml¹·kg⁻¹·min⁻¹) and strikers (49.8 ± 6.2 ml¹·kg⁻¹·min⁻¹). No significant ($p > 0.05$) differences were observed for all other variables, with the exception of body height, body mass, and VO_{2max}. It was therefore concluded that sports scientists and coaches should tailor conditioning programmes in soccer according to players' positions in view of the implications for successful performance.

KEYWORDS: anthropometric characteristics; performance; physical fitness; soccer

<https://www.ncbi.nlm.nih.gov/pubmed/29339995>

Jastrzebska M¹, Kaczmarczyk M², Suárez AD³, Sánchez GFL³, Jastrzebska J⁴, Radziminski L², Jastrzebski Z². Iron, Hematological Parameters and Blood Plasma Lipid Profile in Vitamin D Supplemented and Non-Supplemented Young Soccer Players Subjected to High-Intensity Interval Training. *J NutrSciVitaminol (Tokyo)*. 2017;63(6):357-364.

Vitamin D deficiency has been associated with increased risk for cardiovascular disease and anemia. Vitamin D-related changes in lipid profile have been studied extensively but the relationship between vitamin D and lipid metabolism is not completely understood. As both vitamin D and intermittent training may potentially affect iron and lipid metabolism, the aim of the study was to evaluate whether a daily supplementation of vitamin D can modulate the response of hematological and lipid parameters to high-intensity interval training (HIIT) in soccer players. Thirty-six young elite junior soccer players were included in the placebo-controlled, double-blind study. Participants were non-randomly allocated into either a supplemented group (SG, n=20, HIIT and 5,000 IU of vitamin D daily) or placebo group (PG, n=16, HIIT and sunflower oil). Hematological parameters were ascertained before and after the 8-wk training. The change score (post- and pre-training difference) was calculated for each individual and the mean change score (MCS) was compared between SG and PG using the t test and analysis of covariance. There were no differences between SG and PG at baseline. The red and white cell count, hemoglobin, hematocrit, MCHC, ferritin, and HDL-cholesterol changed significantly over the 8-wk HIIT. However, no significant differences in MCS were observed between SG and PG for any variable. A daily vitamin D supplement did not have any impact on alteration in hematological or lipid parameters in young soccer players in the course of high-intensity interval training.

KEYWORDS: athletic training; intermittent exercise; interval training; nutrition; sport

<https://www.ncbi.nlm.nih.gov/pubmed/29332896>

Loturco I¹, Kopal R¹, Kitamura K¹, Cal Abad CC¹, Faust B², Almeida L², Pereira LA¹. Mixed Training Methods: Effects of Combining Resisted Sprints or Plyometrics with Optimum Power Loads on Sprint and Agility Performance in Professional Soccer Players. *Front Physiol*. 2017 Dec 12;8:1034.

The aim of this study was to compare the effects of two different mixed training programs (optimum power load [OPL] + resisted sprints [RS] and OPL + vertical/horizontal plyometrics [PL]) on neuromuscular performance of elite soccer players during a short-term training preseason. Eighteen male professional soccer players took part in this study. The athletes were pair-matched in two training groups: OPL + RS and OPL + PL. Unloaded and resisted sprinting speeds at 5-, 10-, 20-, and 30-m, change of direction (COD) speed, and performance in the squat jump (SJ), countermovement jump (CMJ), and horizontal jump (HJ) were assessed pre- and post- a 5-week training period. Magnitude based inference with the effect sizes were used for data analysis. A *possible* increase in the SJ and CMJ heights and a *likely* increase in the HJ distance were observed in the OPL + PL group. Meaningful improvements were observed in the COD speed test for both training groups comparing pre- and post-measures. In both unloaded and resisted sprints, meaningful decreases were observed in the sprinting times for all distances tested. This study shows that a mixed training approach which comprises exercises and workloads able to produce positive adaptations in different phases of sprinting can be a very effective strategy in professional soccer players. Moreover, the possibility of combining optimum power loads with resisted sprints and plyometrics emerges as a novel and suitable option for coaches and sport scientists, due to the applicability and efficiency of this strength-power training approach.

KEYWORDS: football; optimal loads; speed ability; team-sports; vertical jumps

<https://www.ncbi.nlm.nih.gov/pubmed/29311968>

Hills SP¹, Russell M². Carbohydrates for Soccer: A Focus on Skilled Actions and Half-Time Practices. *Nutrients*. 2017 Dec 25;10(1). pii: E22..

Carbohydrate consumption is synonymous with soccer performance due to the established effects on endogenous energy store preservation, and physical capacity maintenance. For performance-enhancement purposes, exogenous energy consumption (in the form of drinks, bars, gels and snacks) is recommended on match-day; specifically, before and during match-play. Akin to the demands of soccer, limited opportunities exist to consume carbohydrates outside of scheduled breaks in competition, such as at half-time. The link between cognitive function and blood glucose availability suggests that carbohydrates may influence decision-making and technical proficiency (e.g., soccer skills). However, relatively few reviews have focused on technical, as opposed to physical, performance while also addressing the practicalities associated with carbohydrate consumption when limited in-play feeding opportunities exist. Transient physiological responses associated with reductions in activity prevalent in scheduled intra-match breaks (e.g., half-time) likely have important consequences for practitioners aiming to optimize match-day performance. Accordingly, this review evaluated novel developments in soccer literature regarding (1) the ergogenic properties of carbohydrates for skill performance; and (2) novel considerations concerning exogenous energy provision during half-time. Recommendations are made to modify half-time practices in an aim to enhance subsequent performance. Viable future research opportunities exist regarding a deeper insight into carbohydrate provision on match-day.

KEYWORDS: blood glucose; cognition; ergogenic; football; glycemia; skill
<https://www.ncbi.nlm.nih.gov/pubmed/29295583>

Bunc G¹, Ravnik J¹, Velnar T¹. May Heading in Soccer Result in Traumatic Brain Injury? A Review of Literature. *Med Arch*. 2017 Oct;71(5):356-359.

BACKGROUND:

Globally, soccer is the most popular team sport, unifying many fans all around the world. The epidemiological studies so far have confirmed that head playing and hitting the ball with head may cause minor head injuries, which exert their effects in a cumulative way.

METHODS:

Literature search for this review was conducted and data about traumatic brain injury collected from various sources.

RESULTS:

The consequences of head injury are evident as chronic changes in cognition, including disturbances in concentration and slowing of mental and physical agility.

CONCLUSION:

Various recommendations have been issued for the prevention of chronic negative cumulative effects of soccer ball head playing. In addition, the professional soccer players are also exposed to more intense craniocerebral trauma, such as concussions and contusions. These patients require treatment of skilled sports physicians, neurologists and neurosurgeons and some may need long to return to the sport scene again.

KEYWORDS:

brain injury; concussion; head; head injury; soccer

<https://www.ncbi.nlm.nih.gov/pubmed/29284906>

Rössler R^{1,2}, Junge A^{3,4,5}, Bizzini M^{3,4}, Verhagen E⁶, Chomiak J⁷, Aus der Fünften K⁸, Meyer T⁸, Dvorak J^{3,4}, Lichtenstein E⁹, Beaudouin F⁸, Faude O⁹. A Multinational Cluster Randomised Controlled Trial to Assess the Efficacy of '11+ Kids': A Warm-Up Programme to Prevent Injuries in Children's Football. *Sports Med.* 2018 Jun;48(6):1493-1504.

OBJECTIVE: The objective of this study was to assess the efficacy of a newly developed warm-up programme ('11+ Kids') regarding its potential to reduce injuries in children's football.

METHODS: Children's football teams (under 9 years, under 11 years, and under 13 years age groups) from Switzerland, Germany, the Czech Republic and the Netherlands were invited. Clubs were randomised to an intervention group and a control group, and followed for one season. The intervention group replaced their usual warm-up by '11+ Kids', while the control group warmed up as usual. The primary outcome was the overall risk of football-related injuries. Secondary outcomes were the risks of severe and lower extremity injuries. We calculated hazard ratios using extended Cox models, and performed a compliance analysis.

RESULTS: In total, 292,749 h of football exposure of 3895 players were recorded. The mean age of players was 10.8 (standard deviation 1.4) years. During the study period, 374 (intervention group = 139; control group = 235) injuries occurred. The overall injury rate in the intervention group was reduced by 48% compared with the control group (hazard ratio 0.52; 95% confidence interval 0.32-0.86). Severe (74% reduction, hazard ratio 0.26; 95% confidence interval 0.10-0.64) and lower extremity injuries (55% reduction, hazard ratio 0.45; 95% confidence interval 0.24-0.84) were also reduced. Injury incidence decreased with increasing compliance.

CONCLUSION: '11+ Kids' is efficacious in reducing injuries in children's football. We observed considerable effects for overall, severe and lower extremity injuries. The programme should be performed at least once per week to profit from an injury preventive effect. However, two sessions per week can be recommended to further increase the protective benefit.

<https://www.ncbi.nlm.nih.gov/pubmed/29273936>

Shimba LG¹, Latorre GC¹, Pochini AC¹, Astur DC¹, Andreoli CV¹. Surgical treatment of rectus femoris injury in soccer playing athletes: report of two cases. *Rev Bras Ortop.* 2017 Jan 17;52(6):743-747.

Muscle injury is the most common injury during sport practice. It represents 31% of all lesions in soccer, 16% in track and field, 10.4% in rugby, 17.7% in basketball, and between 22% and 46% in American football. The cicatrization with the formation of fibrotic tissue can compromise the muscle function, resulting in a challenging problem for orthopedics. Although conservative treatment presents adequate functional results in the majority of the athletes who have muscle injury, the consequences of treatment failure can be dramatic, possibly compromising the return to sport practice. The biarticular muscles with prevalence of type II muscle fibers, which are submitted to excentric contraction, present higher lesion risk. The quadriceps femoris is one example. The femoris rectus is the quadriceps femoris muscle most frequently involved in stretching injuries. The rupture occurs in the acceleration phase of running, jump, ball kicking, or in contraction against resistance. Although the conservative treatment shows good results, it is common that the patient has lower muscle strength, difficulty in return to sports, and a permanent and visible gap. Surgical treatment can be an option for a more efficient return to sports.

<https://www.ncbi.nlm.nih.gov/pubmed/29234662>

de Lira CAB¹, Mascarin NC², Vargas VZ², Vancini RL³, Andrade MS². ISOKINETIC KNEE MUSCLE STRENGTH PROFILE IN BRAZILIAN MALE SOCCER, FUTSAL, AND BEACH SOCCER PLAYERS: A CROSS-SECTIONAL STUDY. *Int J Sports Phys Ther.* 2017 Dec;12(7):1103-1110.

BACKGROUND: Anterior cruciate ligament injury is higher in soccer athletes as compared to athletes of other sports. Risk factors for anterior cruciate ligament injury include low knee hamstring/quadriceps strength ratio and bilateral strength deficits.

PURPOSE: To investigate isokinetic thigh muscles strength, hamstring/quadriceps strength ratio, and bilateral strength comparisons in athletes who participate in professional soccer, futsal, and beach soccer.

STUDY DESIGN: Cross-sectional study.

METHODS: Brazilian professional soccer (n=70), futsal (n=30), and beach soccer (n=12) players were isokinetically assessed to examine strength of knee extensors and flexors at 60 degrees/second in concentric mode, to measure peak torque of dominant and non-dominant limbs.

RESULTS: In the dominant limb, for extensors muscles, futsal players presented significantly lower peak torque values (223.9 ± 33.4 Nm) than soccer (250.9 ± 43.0 Nm; $p=0.02$) and beach soccer players (253.1 ± 32.4 Nm; $p=0.03$). Peak torque for extensor muscles in the non-dominant limb was significantly lower in futsal (224.0 ± 35.8 Nm) than in beach soccer players (256.8 ± 39.8 Nm; $p=0.03$). Hamstring/quadriceps strength ratio for dominant limbs for futsal ($57.6 \pm 10.1\%$), soccer ($53.5 \pm 8.8\%$), and beach soccer ($56.3 \pm 8.4\%$) players presented no significant differences between groups; however, the mean values were lower than recommended values found in the literature. There were no strength deficits for any of the evaluated groups when compared bilaterally.

CONCLUSIONS: Futsal athletes presented lower values for quadriceps strength than soccer and beach soccer athletes. Futsal, soccer, and beach soccer players presented no strength asymmetries, but they presented with strength imbalance in hamstring/quadriceps strength ratio.

<https://www.ncbi.nlm.nih.gov/pubmed/29234562>

DeLang MD¹, Kondratek M², DiPace LJ², Hew-Butler T³. COLLEGIATE MALE SOCCER PLAYERS EXHIBIT BETWEEN-LIMB SYMMETRY IN BODY COMPOSITION, MUSCLE STRENGTH, AND RANGE OF MOTION. *Int J Sports Phys Ther.* 2017 Dec;12(7):1087-1094.

BACKGROUND: Functional and structural asymmetries attributed to limb dominance are equivocal in soccer players. Previous authors hypothesize the existence of between-limb asymmetry secondary to the repetitive unilateral nature of kicking. However, symmetry is often present, particularly in measures of muscle strength. **PURPOSE:** The purpose of the present study was to determine if lateral dominance is accompanied by corresponding between-limb asymmetries in a comprehensive assessment of body composition, muscle strength, and range of motion in healthy soccer players. **STUDY DESIGN:** Cross-sectional, observational. **METHODS:** 17 healthy male NCAA Division One collegiate soccer players participated (age 19.6 ± 1.5 years; BMI 23.9 ± 1.4 kg/m²). Footedness was attained via participant self-report. Lower limb muscle strength (hand held dynamometry), range of motion (goniometry), and body composition (dual energy x-ray absorptiometry scan) were measured. Lower-leg symmetry was analyzed comparing the dominant versus non-dominant limb using paired t-tests. **RESULTS:** Comparisons revealed no statistically different differences in outcomes, indicating remarkable symmetry in all measures of body composition, muscle strength, and range of motion ($p>0.05$) between the dominant and non-dominant lower limbs. **CONCLUSIONS:** The authors speculate the prevalence of running versus kicking, the longitudinal effects of playing careers, and/or functional compensation attenuates the expected asymmetries in healthy male collegiate soccer players.

KEYWORDS: Bone density; footedness; lateral dominance; muscle strength; range of motion

<https://www.ncbi.nlm.nih.gov/pubmed/29234560>

Burboa J¹, Bahamonde M¹, Inostroza M¹, Lillo P¹, Barahona M², Palet M², Hinzpeter J². [Effect of sports training in angular compartment of the lower limbs in children footballers aged 11 to 12 years old]. *Acta Ortop Mex.* 2017 May-Jun;31(3):128-133.

Anterior Cruciate Ligament (ACL) injury is an important cause of days lost in athletes. Most ACL injuries are non-contact and are associated with biomechanical risk factors that increase tension in the ACL: increased knee valgus (KV) and hip flexion (HF) and decreased flexion of knee (KF). Muscle around the knee contributes to knee stability, so fatigue produced by exercise could alter knee balance, increasing LCA tension. The aim of the study is to determine the angular behavior before and after a physical load for CF, RR and RV in children born in 2002-2003. A non-randomized clinical trial was conducted. The sample consisted of 50 students from soccer schools born between 2002 and 2003. The angular behavior of CF, RR and VR was compared, before and after performing standardized training. The angular behavior was measured by performing the DJ test with data obtained by inertial sensors. After exercise, the 3 variables increased, but only HF reached significant difference. Other important finding was the difference found in KV between the dominant leg and the support limb, at both times: rest and post exercise. It was concluded that the angular behavior of CF increases significantly in both limbs post-exercise and that preventive measures should be applied for the management of valgus in the supporting limb.

KEYWORDS: Anterior cruciate ligament; drop jump; fatigue; inertial sensors; peak angular measurement

<https://www.ncbi.nlm.nih.gov/pubmed/29216703>

Slimani M¹, Paravlić A², Bragazzi NL^{3,4}. Data concerning the effect of plyometric training on jump performance in soccer players: A meta-analysis. *Data Brief.* 2017 Sep 30;15:324-334.

Plyometric training (PT) enhances soccer performance, particularly vertical jump. However, the effectiveness of PT depends on various factors. A systematic search of the research literature was conducted for randomized controlled trials (RCTs) studying the effects of PT on countermovement jump (CMJ) height in soccer players. Ten studies were obtained through manual and electronic journal searches (up to April 2017). Significant differences were observed when compared: (1) PT group vs. control group (ES=0.85; 95% CI 0.47-1.23; $I^2=68.71\%$; $p<0.001$), (2) male vs. female soccer players ($Q=4.52$; $p=0.033$), (3) amateur vs. high-level players ($Q=6.56$; $p=0.010$), (4) single session volume (<120 jumps vs. ≥ 120 jumps; $Q=6.12$, $p=0.013$), (5) rest between repetitions (5 s vs. 10 s vs. 15 s vs. 30 s; $Q=19.10$, $p<0.001$), (6) rest between sets (30 s vs. 60 s vs. 90 s vs. 120 s vs. 240 s; $Q=19.83$, $p=0.001$) and (7) and overall training volume (low: <1600 jumps vs. high: ≥ 1600 jumps; $Q=5.08$, $p=0.024$). PT is an effective form of training to improve vertical jump performance (i.e., CMJ) in soccer players. The benefits of PT on CMJ performance are greater for interventions of longer rest interval between repetitions (30 s) and sets (240 s) with higher volume of more than 120 jumps per session and 1600 jumps in total. Gender and competitive level differences should be considered when planning PT programs in soccer players.

KEYWORDS:

Jump height; Meta-analysis; Soccer; Stretch-shortening cycle

<https://www.ncbi.nlm.nih.gov/pubmed/29214194>

Sadigursky D¹, Braid JA², De Lira DNL¹, Machado BAB¹, Carneiro RJF¹, Colavolpe PO¹. The FIFA 11+ injury prevention program for soccer players: a systematic review. *BMC Sports Sci Med Rehabil*. 2017 Nov 28;9:18.

BACKGROUND:

Soccer is one of the most widely played sports in the world. However, soccer players have an increased risk of lower limb injury. These injuries may be caused by both modifiable and non-modifiable factors, justifying the adoption of an injury prevention program such as the Fédération Internationale de Football Association (FIFA) 11+. The purpose of this study was to evaluate the efficacy of the FIFA 11+ injury prevention program for soccer players.

METHODOLOGY:

This meta-analysis was based on the PRISMA 2015 protocol. A search using the keywords "FIFA," "injury prevention," and "football" found 183 articles in the PubMed, MEDLINE, LILACS, SciELO, and ScienceDirect databases. Of these, 6 studies were selected, all of which were randomized clinical trials.

RESULTS:

The sample consisted of 6,344 players, comprising 3,307 (52%) in the intervention group and 3,037 (48%) in the control group. The FIFA 11+ program reduced injuries in soccer players by 30%, with an estimated relative risk of 0.70 (95% confidence interval, 0.52-0.93, $p = 0.01$). In the intervention group, 779 (24%) players had injuries, while in the control group, 1,219 (40%) players had injuries. However, this pattern was not homogeneous throughout the studies because of clinical and methodological differences in the samples. This study showed no publication bias.

CONCLUSION:

The FIFA 11+ warm-up program reduced the risk of injury in soccer players by 30%.

<https://www.ncbi.nlm.nih.gov/pubmed/29209504>

Marques VB¹, Medeiros TM, de Souza Stigger F¹, Nakamura FY, Baroni BM¹. THE FUNCTIONAL MOVEMENT SCREEN (FMS™) IN ELITE YOUNG SOCCER PLAYERS BETWEEN 14 AND 20 YEARS: COMPOSITE SCORE, INDIVIDUAL-TEST SCORES AND ASYMMETRIES. *Int J Sports Phys Ther*. 2017 Nov;12(6):977-985.

The Functional Movement Screen (FMS™) is a widely used seven-test battery used by practitioners working in sport medicine. The FMS™ composite score (sum of seven tests) in soccer athletes from different competitive levels has been well explored in literature, but the specific movement deficits presented by young high competitive level players remains unclear. **PURPOSE:** The aim of the present study was to provide a detailed description of the performance of elite young soccer players (age 14-20 years) on the FMS™ testing battery. **STUDY DESIGN:** Cross-sectional observational study. **METHODS:** One-hundred and three young soccer players (14-20 years) from a premier league club were assessed by two experienced raters using the FMS™ testing battery. FMS™ composite score, individual-test scores and asymmetries were considered for analysis, and comparisons between age categories were performed. **RESULTS:** FMS™ composite scores ranged from 9 to 16 points (median=13 points). 82% of the athletes had a composite score ≤ 14 points, and 91% were classified into the "Fail" group (score 0 or 1 in at least one test). Almost half of athletes (48%) had poor performance (i.e., individual score < 2) in "deep squat" test. Most of athletes in the younger categories (under-15 and under-16) had poor performance in the "trunk stability push-up" test (70%) and in the "rotary stability" test (74%). Asymmetry in at least one of five unilateral FMS™ tests was found in 65% of athletes. **CONCLUSION:** High-performance young soccer players have important functional deficits, especially in tasks involving deep squat and trunk stability, as well as high prevalence of asymmetry between right and left body side.

<https://www.ncbi.nlm.nih.gov/pubmed/29158958>