

RESULTS: A significant overall effect of PP on team's performance success ($p < 0.01$, $\eta_p^2 = 0.16$) was found. Post-hoc analyses revealed players in the G1 had significantly ($p < 0.05$) higher CMJ (43.70 ± 5.09 cm) compared to G3 (38.60 ± 3.98 cm) and G4 (40.40 ± 3.51 cm) players. Moreover, players in the G1 generated greater VGF (26.93 ± 2.80 N.kg⁻¹) compare to G4 (25.14 ± 1.79 N.kg⁻¹) and higher values of KE compare to G3 players in both DL and NL (G1: KE_{DL} = 3.19 ± 0.47 N.m.kg⁻¹, KE_{NL} = 3.17 ± 0.46 N.m.kg⁻¹, G3: KE_{DL} = 2.89 ± 0.31 N.m.kg⁻¹, KE_{NL} = 2.87 ± 0.28 N.m.kg⁻¹). Players in the most successful teams (G1) also showed significantly higher VO_{2max} (60.32 ± 2.62 ml.min.kg⁻¹) compare to players in the lowest group (G4: 57.87 ± 2.74 ml.min.kg⁻¹).

CONCLUSIONS: The current findings indicate PP including CMJ, VGF, muscle strength of KEs and VO_{2max} of individual player is associated with final team ranks in the Czech professional soccer league. This evidence may be valuable to discuss team's success in male professional soccer league.

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Identifying Lower Extremity Static And Dynamic Asymmetries And Their Mutual Association In Male Professional Soccer

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Between-limb asymmetries (BA) during standing, jumping and running are often discussed with physical performance and injury risk. It is reported that magnitude of BA is related to a specific movement commonly performed in certain sports (e.g. kicking ins soccer). Since those asymmetrical movements are repeatedly performed in some sports, it may gradually lead to a greater BA in both static and dynamic tasks over time. However, studies that focused on BA measure on both static and dynamic tasks are limited. Also, an association between static and dynamic tasks is understudied.

PURPOSE: To investigate the BA in both static and dynamic tasks as well as examine a relationship between static and dynamic tasks among athletes who regularly performed asymmetrical movements.

METHODS: A cross-sectional study was performed using 152 male professional soccer players of the highest Czech league. Kinematic running data were analyzed bilaterally using 3D treadmill at running velocity 12 km.h⁻¹. Running asymmetry (RA) was evaluated and quantified using symmetry index (SI) for following variables: Impact Peak Force (IPF), Active Peak Force (APF), Impulse (I), Loading Rate (LR), Push off Rate (PR) and Step Length (SL). Postural stability (PSA) was evaluated by with a pressure platform as difference between legs during one-leg standing task (60 s). Pearson's coefficient (r), coefficient of determination (R²) and effect size (d) were used for statistical assessment.

RESULTS: The magnitude of BA varied by each variable with, with asymmetries < 2% (APF = 1.36 ± 1.12 % [range: 5.50 %], I = 1.28 ± 1.07 % [range: 5.50 %], SL = 1.16 ± 1.38 % [range: 8.50 %] and greater asymmetries > 5 % (LR = 6.33 ± 6.02 % [range: 38%], PSA = 7.42 ± 6.13 % [range: 28%]). Significant positive correlation ($p < 0.05$) has been found between APF vs. I ($r = 0.44$, R² = 0.19, d = moderate), IPF vs. LR ($r = 0.38$, R² = 0.14, d = moderate), APF vs. PR ($r = 0.44$, R² = 0.19, d = moderate), PR vs. I ($r = 0.35$, R² = 0.12, d = moderate), LR vs. I ($r = 0.16$, R² = 0.03, d = small) and significant negative correlation between PSA vs. SL ($r = -0.18$, R² = 0.03, d = small).

CONCLUSIONS: There were variabilities in the magnitudes of BA in both static and dynamic tasks. Limb asymmetry relationship between static and dynamic tasks were weak or none in this group of elite male professional soccer players.

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GPS-derived External Workloads Vary By Position And Match Result In Professional Soccer Players

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PURPOSE: Professional soccer is a physically demanding sport that requires players to be highly trained in order to meet the demands of gameplay. Recent advances in global positioning systems (GPS) have made it possible to track external workload measures for individual players in practice and competition, however, there is a lack of evidence on how these measures may relate to match results. Therefore, we sought to analyze external workloads by player position and determine if they vary depending on the result of competitive matches.

METHODS: External workloads (total distance, high-speed running distance, accelerations, decelerations, number of sprints, sprint distance, impacts, high-intensity bursts) were analyzed in male professional soccer players (n=23) across a competitive season (28 games). One-way analysis of variance (ANOVA) was used to determine if workloads varied by position (striker - ST, wide midfielder - WM, central midfielder - CM, wide defender - WD, central defender - CD) or across games won (n=8), lost (n=13) or tied (n=7). Additionally, repeated-measures ANOVA was used to assess any potential differences in workloads specific to each position across all categories. Statistical significance was set at $p < 0.05$ and results presented as mean \pm SD.

RESULTS: Across all games, positional analysis revealed more high-speed running was done by ST (473 ± 91 m) and WD (473 ± 191 m) in comparison to CM (361 ± 77 m, both $p = 0.02$) and CD (335 ± 122 m, $p < 0.001$; $p = 0.02$ respectively). ST and WD also performed more sprints than CD (30.3 ± 21 , $p < 0.001$; 30.1 ± 21 , $p < 0.001$ respectively). Whole-team data showed no differences in any external workload variable with respect to match result ($p > 0.05$), however, in games won ST did more high-speed running than in games lost (542.8 ± 81.7 vs. 445.1 ± 75.9 m, $p = 0.03$) and WD performed more highest-speed running ($7-11$ m/s) in games tied vs. those lost (141.1 ± 70 vs. 81.8 ± 25.2 m, $p = 0.04$).

CONCLUSIONS: Whole-team external workload measures do not vary depending on the result of matches; however, high speed running may be a differentiating factor at the positional level. Coaches should consider position-specific analysis when examining player workloads and match results.

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Characteristics Of Exercise Stress Differ Between Practice And Competition Settings In Collegiate Soccer

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Practice structures that closely resemble the characteristics of competition are likely to elicit better sport preparation.

PURPOSE: To compare the exercise profiles experienced by collegiate soccer players during practice and game settings.

METHODS: We evaluated cardiovascular and movement parameters of 30 D1 female soccer players during 6 twice-daily practices (12 sessions), 14 once-daily practices, and 7 games. Polar Team Pro devices (Polar Electro, Inc.) captured exercise duration, distance traveled, number of sprints, average and maximum running speed, average and maximum heart rate (HR), and Polar-generated metrics for cardio load and training load. Means for each of these variables were calculated for every player across the 4 exercise conditions: first twice-daily practice (P1), second twice-daily practice (P2), single practice session (P3), and game. Differences in workload parameters between these settings were assessed with repeated measures ANOVA.

RESULTS: Exercise duration was longer in games (116.3 ± 21.0 min) than all practice types ($p < 0.001$ for each comparison). Players covered more distance in games ($4,462.3 \pm 2,555.7$ m) than practices ($p < 0.005$). Average running speed was higher in practice than games, but the largest difference was a trend ($p = 0.064$). Maximum speed achieved was highest in games (24.4 ± 4.9 kph); only the comparisons with P1 ($p < 0.001$) and P3 ($p = 0.001$) were significant. Athletes recorded more sprints in games (14.1 ± 9.8) than all practice types ($p < 0.001$). The lowest mean HR (128.8 ± 19.8 bpm) and percentage of HR max ($64.4 \pm 10.2\%$) occurred in games; both comparisons with P2 reached significance ($p < 0.005$). Maximum HR was highest in games (188.5 ± 19.8 bpm); only the comparison with P1 reached significance ($p = 0.001$). The largest cardio load (143.9 ± 66.7) and training load (126.5 ± 71.4) were achieved in games; comparisons with P1, P2, and P3 were significant ($p < 0.01$).

CONCLUSIONS: Practices and games exhibited differences in exercise stress. Practices were shorter and had higher mean values for HR and running speed. In games, players performed more sprints, achieved higher speeds, and recorded higher maximum HR values. Coaching staff may consider incorporating additional anaerobic activity in soccer training to better simulate competition settings.