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Eero Savolainen

Female Football Players' Training Load
and Physical Performance



Prosessi

2020

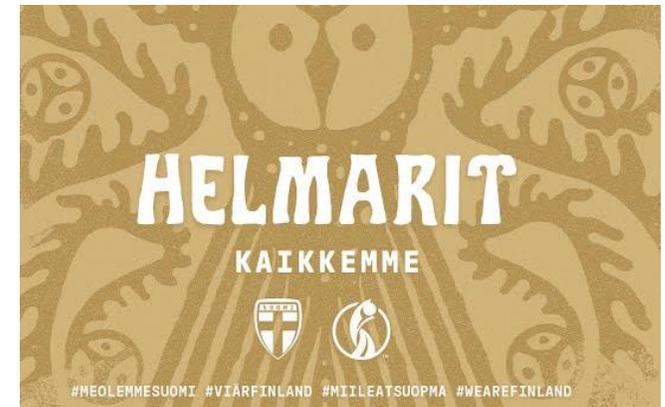


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1. Artikkel

Physical qualities and body composition predictors of running performance in national level women's official soccer matches

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ABSTRACT: The purpose of the study was to (1) determine match running performance, anthropometry and various physical qualities of national level women soccer players and (2) identify key physical qualities and anthropometric predictors of match running profile during a competitive season. Twenty-five national level Finnish soccer players participated in the study. Players performed countermovement jump, loaded squat jumps, 30-meter sprint, maximum isokinetic knee flexor and extensor contractions, an incremental treadmill test and underwent body composition assessment in the lab. Match running performance was analyzed from 115 match observations during competitive league matches over 11 weeks after the laboratory tests. Pearson's correlation was used to determine bivariate relationships between match running variables and physical qualities and anthropometric variables. Identified significant bivariate relationships were then entered into multiple regression analyses to identify the best predictors of match running performance. Physical qualities and anthropometric variables predicted 65% of very high-intensity (VHIR) (> 19 km/h) and 63% of high-intensity (HIR) (13–19 km/h) running distances covered during matches, but only 22% of low-intensity (LIR) and 43% of total distances. Body fat percentage and high-speed knee flexor concentric strength were the most important predictors to VHIR and HIR while aerobic capacity-related variables were most important predictors to LIR and total distance. Physical qualities and anthropometry can predict a large portion of players' VHIR and HIR performance during matches in women's national level soccer. To increase player's VHIR and HIR distance, coaches could aim to develop players' high-speed (especially knee flexor concentric) strength and optimize player's body composition.

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Key words:
Football
High intensity running
Anthropometrics
Female
Match demands

N = 25
Kansallinen taso
lähialueelta
Observointi +
mittaukset

Suoriutuminen
fyysisen
suorituskyvyn
labrasteissa
ennustaa suuren
osan
otteluliikkumisesta

2. Artikkel



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Section III – Sports and Physical Activity

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Female Soccer Players' In-Season Weekly Training Load and Intensity: Comparison between National League's Top and Bottom-Half Ranked Teams

by

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This study aimed to (1) quantify national-level female soccer players' accumulated microcycle (weekly) training load (accumulated absolute value) and intensity (value relative to duration), (2) investigate possible differences in training load and intensity between teams in the league's top- and bottom-half. Sixty-three females from six teams in the highest league participated in the study. Participants were divided into top-half (TH, n = 28) and bottom-half (BH, n = 35) groups based on their team's league ranking. Players' external and internal training load and intensity were monitored in all on-field training sessions and league matches during a three-week observation period (690 data samples) using the Polar Team Pro system. There were no differences between groups in the number of weekly training sessions or total duration. Accumulated external and internal load were highly similar between groups. Instead, the TH group reached significantly higher values than the BH group in multiple external intensity variables, such as total distance per minute and the number of low-, moderate- and high-intensity accelerations per minute ($p = 0.004-0.001$). There were no differences in the mean heart rate between groups. The TH group's training external intensity was also closer to match intensity in multiple variables, such as total distance and the number of low- and moderate-intensity accelerations and decelerations compared to the BH group ($p = 0.029-0.001$). These findings suggest that more successful teams achieved higher external intensity for the same internal response, and their average external training intensity was closer to match demands. Thus, it seems plausible that TH players had better physical qualities and their training prepared them better for matches than BH.

Keywords: soccer; women; external load; internal load; microcycle

N = 63
Kansallinen taso
Maanlaajuinen
Observointi

Ei eroa sisäisen tai ulkoisen kuorman kokonaismäärässä liigan parempien ja heikompien joukkueiden pelaajien välillä, mutta top-joukkueiden pelaajilla suurempi intensiteetti (kuorma per aikayksikkö)

3. Artikkel



OPEN ACCESS

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Changes in female football players' in-season training load, intensity and physical performance: training progression matters more than accumulated load

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Introduction: This observational study investigated: (1) potential changes in female football players' in-season training load, intensity and physical performance, and (2) if in-season accumulated training load, intensity, or their progression are associated to changes in physical performance.

Methods: Thirty-five national level female players (~21 years, $n = 35$) from three top-teams of the Finnish national league participated. Players performed tests at the beginning and at the end of the 27-week in-season. Tests were: 30-m sprint, countermovement jump (CMJ) and 1,200-m shuttle run, used to calculate maximal aerobic speed (MAS). Players' external and internal training load and intensity were monitored in all on-field training sessions and official matches (3,941 data samples) using Polar Team Pro system.

Results: Training load decreased towards the end of the in-season ($p < 0.05$), but intensity remained stable. No changes in physical performance test results occurred from before to after in-season tests at a group level. Change of CMJ correlated negatively with accumulated training load, intensity and progression of total distance (TD) and low-intensity running distance (LIRD) ($r = -0.398$ to -0.599 , $p < 0.05$). Instead, development of MAS correlated positively with progression of TD and LIRD intensities ($r = 0.594$ and 0.503 , $p < 0.05$). Development of both CMJ and MAS correlated positively with intensity progression of very-high-intensity running distance (VHIRD) and number of accelerations and decelerations ($r = 0.454$ – 0.588 , $p < 0.05$).

Discussion: Reduced training load over the in-season is not detrimental for players' physical performance when training intensity progressively increases. Intensity progression of VHIRD, moderate- and high-intensity accelerations and decelerations are indicators of both MAS and CMJ development, respectively.

N = 35
Kansallinen taso
Maanlaajuinen
Observointi + mittaukset

Ottelukauden
harjoituskuorman ja –
intensiteetin (kuorma/
aikayksikkö)
progressiivisuus
yhteydessä fyysisen
suorituskyvyn kehitykseen

4. Artikkel

Female football players' key physical qualities: playing-position specific comparison between national-team selected and non-selected players

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ABSTRACT: This study investigated 1) possible differences in physical qualities between national team selected and non-selected female football players specific to playing position and 2) possible between-position differences in physical qualities specific to competition level (national team selected and non-selected players separately). One-hundred eight-six female players from Finland's senior and youth national teams ($n = 85$) and Finland's national league teams ($n = 101$) participated in this cross-sectional study. The following field tests were used to characterize physical qualities of the players: 30-meter sprint test with 10-meter split time for speed, countermovement jump (CMJ) for lower-body power, and 1200-meter shuttle running test (i.e. Bronco test) was used to calculate maximal aerobic speed (MAS). National team selected central- and wide-defenders and central-midfielders were faster ($g = 0.74-0.94$, $p = 0.042-0.007$) in 10-meter sprint-time and central-midfielders and forwards were faster in 30-meter sprint-time ($g = 0.73-0.81$, $p = 0.047-0.033$) compared to non-selected counterparts. Selected wide-midfielders jumped higher in CMJ ($g = 0.72$, $p = 0.048$) than non-selected counterparts. Selected central- and wide-midfielders and forwards had higher MAS ($g = 0.63-1.68$, $p = 0.037-0.001$) than non-selected counterparts. Between-position analysis revealed that selected wide-midfielders reached higher CMJ height than central-midfielders and achieved higher MAS than central-defenders. Non-selected wide-defenders were faster for 30-meter sprint time than central-defenders, central-midfielders, and forwards. Physical qualities, especially speed, differentiate national team selected players from non-selected players. Between-position differences varied between groups, but players with better physical qualities played in wide-positions in both groups.

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Soccer
Women
Speed
Power
Endurance

N = 186
Kansallinen ja
kansainvälinen taso
Maanlaajuinen
mittaukset

Fyysinen suorituskyky,
erityisesti nopeus,
erottaa
maajoukkuepelaajat
kansallisen tason
verrokeista

Hyödyt



Tulevaisuus



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