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POVEZANOST LABORATORIJSKIH I TERENSKIH TESTOVA S UDALJENOSTIMA PRIJEĐENIM RAZLIČITIM INTENZITETOM TIJEKOM UTAKMICA NOGOMETAŠICA JUNIORKI

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SAŽETAK

Osnovni cilj ovog istraživanja jest utvrditi povezanost terenskih i laboratorijskih testova s prijeđenim udaljenostima različitim intenzitetom tijekom utakmice.

Za potrebe ovoga istraživanja uzorak ispitanica sačinjavao je 70 nogometašica (N=70) juniorki (U-19) šest ekipa Prve hrvatske nogometne lige promatranih kroz 15 nogometnih utakmica, na način da je svaka nogometašica bila promatrana kroz 4 utakmice. Uzorak varijabli sastojao se od prediktora, koji se u istraživanju odnosio na morfološke karakteristike: visina ispitanica, masa ispitanica, % masti (AV%TM) i 7 kožnih nabora, testova za procjenu aerobne sposobnosti: (Yo-Yo test, Cooperov test COOP, test maksimalnog primitka kisika određenog direktnom metodom VO2max); testa za procjenu anaerobne izdržljivosti: (RAST test); testova za procjenu eksplozivne snage tipa sprinta: Sprint 5m iz mjesta (S_5M), Sprint 10m iz mjesta (S_10M), Sprint 20m iz mjesta (S_20M), i kriterija koji su definirani kroz prijeđene udaljenosti različitim intenzitetom tijekom nogometne utakmice: hodanje, trčanje niskog intenziteta, trčanje srednjeg intenziteta, trčanje visokog intenziteta, sprintanje, te ukupne prijeđene udaljenosti.

Testovima za procjenu eksplozivne snage tipa sprinta, ispitanice su izmjerene u tjednu odigravanja pripremne utakmice,a sedam dana nakon odigrane utakmice bile su podvrgnute testovima za procjenu aerobne sposobnosti i anaerobnog kapaciteta, i to redom: Cooperovim testom, RAST testom, YO-YO testom, i na kraju testom maksimalnog primitka kisika odrađenog direktnom metodom.

Za obradu podataka korišten je sustav 3D tille sport analyzer pomoću kojeg su igračice snimljene za vrijeme utakmica.

Vrijednosti svake pojedine varijable izračunao se se uz pomoć deskriptivnih parametara.

Za sve varijable izračunati su centralni i disperzivni parametri: aritmetička sredina (AS), standardna devijacija (SD), minimum (MIN), maksimum (MAX) i raspon rezultata (RAS) te spljoštenost (KURT) i zakrivljenost distribucije (SKEW). Normalnost distribucije varijabli testirala se Kolmogorov-Smirnovljevim testom. Povezanosti između prediktorskih varijabli, te između prediktorskih i pojedinačne kriterijske varijable, izračunala se uz pomoć Pearsonov koeficijenta korelacije (r), dok se predikcija aerobne sposobnosti i anaerobnog kapaciteta nogometašica utvrdila na temelju rezultata multiple regresijske analize. Pogreška zaključivanja odredila se na $p<0,05$.

Rezultati ovog istraživanja pokazali su kako većina hipoteza nije prihvaćena ili je djelomično prihvaćena jer je samo nekolicina testova imala pozitivan utjecaj na zadane kriterije. Pa je tako utvrđeno da na kriterijsku varijablu Hodanje statistički značajan pozitivan utjecaj ima varijabla

ANPOT (nabor potkoljenica). Utjecaj ostalih šest kožnih nabora nije imao utjecaja. Statistički značajan utjecaj nije utvrđen kod testa za procjenu aerobnih sposobnosti Yo-Yo za kriterij Niski intezitet, zatim testa maksimalnog primitka kisika VO2max i kriterija Srednji intezitet, testa Yo-Yo i kriterija Srednji intezitet i kod testa za procjenu anaerobnog kapaciteta Rast i kriterija Visoki intezitet. No, uočen je pozitivan statistički utjecaj testa za procjenu eksplozivne snage tipa sprinta Sp20 i kriterija Sprint, te statistički značajan utjecaj testova VO2max, kožni nabor na prsima ANP i kožni nabor nadlaktice i kriterija Ukupno prijeđena udaljenost.

S obzirom na činjenicu kako nogomet svojom strukturom pripada grupi kompleksnih gibanja izrazite složenosti, od mladih nogometašica zahtjeva sve višu razinu razvijenosti antropološkog statusa. Različitosti i specifičnosti zahtjeva suvremenog nogometa nametnule su nužnost određivanja aktualnog stanja antropološkog statusa pojedine nogometašice, te na osnovu tih saznanja postavljanje temelja za uspješno i efikasno programiranje i kontrolu transformacijskih postupaka. Istraživanja koja se bave antropometrijom, funkcionalnim sposobnostima nogometašica, analizama utakmica u smislu inteziteta savladavanja pojedinih dionica tijekom utakmica, povezanošću pojedinih testova za direktno mjerenje ili indirektnu procjenu maksimalnog primitka kisika, nije pronađen rad koji bi najbolje procijenio utjecaj pojedinog terenskog ili laboratorijskog testa na intezitet trčanja nogometašica tijekom utakmice, pa je ovaj rad doprinos u iznalaženju najboljih testova za procjenu prijeđenih udaljenosti različitim intezitetom.

Ključne riječi: nogomet, antropološki status, utjecaj testova, prijeđena udaljenost

SUMMARY

RELATION BETWEEN LABORATORY AND FIELD TESTS AND DISTANCES CROSSED IN DIFFERENT INTENSITIES DURING JUNIOR FEMALE SOCCER MATCHES

The primary aim of this research was to determine relation between field and laboratory tests and distances crossed in different intensities during a match.

The sample of examinees consisted of 70 soccer players (N=70) of junior age group (U-19), belonging to six teams of First Croatian soccer league, observed during 15 soccer matches, while each player was observed during 4 matches. The sample of variables consisted of predictors, which in this research referred to morphological characteristics: examinees` height, examinees` mass, fat % (AV%TM), seven skin folds, aerobic ability evaluation tests: (Yo-Yo test, COOP Cooper test, maximum oxygen acquisition test determined by direct VO2max method); anaerobic endurance evaluation test (RAST test); sprint type explosive power evaluation tests: 5m sprint (S_5M), 10m sprint (S_10M), 20m sprint (S_20M), and the criteria defined through distances crossed in different intensities during a soccer match: walking, low intensity running, medium intensity running, high intensity running, sprinting, and total distance crossed.

Sprint type explosive power evaluation tests were used on examinees during the week of preparatory match, while the examinees were subjected to aerobic ability and anaerobic capacity evaluation tests, in the following order: Cooper test, RAST test, Yo-Yo test, and finally, maximum oxygen acquisition test, using the direct method.

3D tille sport analyser system was used in data processing; the players were recorded during the matches.

The values of each individual variable were calculated using the descriptive parameters. Central and dispersive parameters were calculated for all variables: arithmetic mean (AM), standard deviation (SD), minimum (MIN), maximum (MAX) and data span (SPA), kurtosis (KURT) and skewness of distribution (SKEW). The normality of variables distribution was tested using the Kolmogorov-Smirnov test. The relations between the predictor variables and between predictor and individual criterion variables were calculated using the Pearson correlation coefficient (r), while the prediction of aerobic ability and anaerobic capacity of soccer players was determined based on results of multiple regression analysis. The conclusion error was determined on $p<0.05$.

The results of this research showed that most hypotheses were not accepted or were partially accepted since only few tests had positive influence on the assigned criteria. It was determined that the ANPOT (lower leg skin fold) variable had statistically significant positive influence on the criterion variable of Walking. The remaining six skin folds did not have any influence. Statistically significant influence of Yo-Yo aerobic ability evaluation test was not determined for the Low intensity criterion, as well as for VO2max maximum oxygen acquisition test and Middle intensity criterion, Yo-Yo test and Middle intensity criterion and Growth anaerobic capacity evaluation test and High intensity criterion. However, a positive statistical influence of SP20 sprint type explosive power evaluation test on the Sprint criterion was noticed, and the statistically significant influence of VO2max, chest skin fold ANP and upper arm skin fold on the Total traversed distance criterion.

Regarding the fact that soccer, according to its structure, belongs to the group of compound movements of distinctive complexity, it demands a higher level of anthropological status development. The differences and specificities of contemporary soccer demands imposed a necessity of determining an actual state of anthropological status for every soccer player, and based on that knowledge, setting the foundation for successful and efficient programming and controlling of transformation procedures. Review of researches dealing with anthropometry, functional abilities of female soccer players, match analyses in the sense of intensity of crossing certain distances during matches, relation of certain tests for direct measuring or indirect evaluation of maximum oxygen acquisition showed a shortage of papers evaluating the influence of certain field or laboratory test on the intensity of soccer players` running during a match, so this paper is a contribution to the process of finding the best tests for the evaluation of distances crossed in different intensities.

Keywords: soccer, anthropological status, tests influence, crossed distance