

THE INFLUENCE OF VARIOUS PREVENTIVE TRAINING PROGRAMS ON MOTORICAL AND FUNCTIONAL ABILITIES OF LOWER QUALITY FOOTBALL PLAYERS

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Abstract

The goal of this work is to research the influence of preventive training program on football players (n=19; 22.61 +/- 4,3 age) of NK Belišće from third national croatian league. Measures were conducted in two time stamps : initial measuring at the beginning of preparation period and the second 5 weeks after. Other than descriptive parameters (age, height, weight) for establishing motorical and functional status of players which should influence on lower rate and intensity of injuries. Following tests are chosen: 30 meters sprint; 60 seconds abt crouch test; push ups for maximal repetition; 4 types of „plunk“ isometric endurance test, frontal, back, lateral (left), lateral (right); lateral movement agility test; specific test with ball for coordination; beep test for aerobic endurance. T-test for dependent samples showed differences between the initial and final measures. Given results show that group improved results in three test results: 30 meters sprint, push up maximal repetition and back plunk isometric endurance test

Key words: football, prevention, injury

Introduction

Preventive training program become important segment of football as intensity of the game become higher. Energetic analysis shows that football is aerobic- anaerobic game. We have data that maximal oxygen uptake is 60-67 ml/min/ kg with German first national league players (Verheijen 1998). Football player today makes 100-200 sprints from 5-10 meters (Verheijene, 1997). From that information is clear that much energy is used from phogene anaerobic source. In situations where repeatedly sprints are made glycolitic source of energy are used and data in those situations are 8-12 mmol/l lactate concentration in blood (Weineck, 2000).

Structures of movement in football game are demanding. Football technique is divided in two groups. First group of movements are without the ball which represent 95% of a single game. By that we mean: running, jumps, spins, falls, get-ups, short stops and changes of movement tempo (Marković & Bradić, 2008). Second group of movement is football technique with ball which is consisted of shooting, passing, dribble, duels and so on. From all those information we see that high energetic demands, high intensity and structure of movement makes football game of high risk of injury for players. At present there is huge amount of information that show us influence of preventively training program. From researches most exposed segments of body to injuries are knee, ankle, spine, flexors and extensors of thighs and lower leg. In most of the researches preventive training program is consisted of strength and power, plyometric, balance, proprioception, core isometric and speed exercise. From existing researches we can see that preventive training program significantly enhances motor and

functional status on football players which has influences on lower rate and intensity of injury. Not many researches are conducted on low level quality football players most of them are on high quality. The researches are: Braunsaein, 2013; Mellion, 2003; Mahler & Donaldson 2010; Šimić, Šarabon, Marković, 2013; Olsen 2005; Šimeki 2006

Methods

Subjects

The sample represents 19 players of NK Belišće seniors of third Croatian football league 2013/2014. Initially there was 30 players (n=30; 22.06 +/- 4.3 year). Only 19 players (n=19; 22.61 +/- 4.03 year) participated in initial and final testing so only they went in statistical observation.

Experimental plan

The survey was conducted through preparatory period in period of 5 weeks (35 days). Training program was planned at 9 am and 6 pm. There was 50 practices and 5 preparatory games. Each practice considered standardized warm up: running, miofascilar massage, dynamic stretching. In the main part of practice there was a strength program, agility, stability, balance and speed exercises.

Measuring

Initial testing were taken at 5 pm on 17.07.2014. and final testing on 19.08.2014. Testing was taken on football centre Gradski vrt on grass field. Procedure and measures were the same at both testing. Participant were introduced to procedure and didn't have experience with similar testing. Before the testing started all players had anthropometric measuring and warm up of 20 min.

Training proces

After standardized warm up wich was consisted of running 1 km, miofascilar masage, dynamic flexibility and corrective postural exercises the preventing training program started in next order: *plyometry*: 9 exercises, 2 sets, 10-15 sec; low to moderate intensity, *strength*: 10 exercises, 3 sets, 40 sec work/ 20 sec rest, low to moderate intensity, *agility*: 7 exercises; 2 sets, 4-10 rep, maximal intensity, *stabilisation*: 14 exercises, 1-2 set, 5-10 rep, or 20-60 sec, *speed*: 11 exercises, 1-

2 sets, 30-200m distance, over-speed and resisted speed exercises, 2 rep, maximal intensity.

Statistical analysis

For data analysis we used Statistica ver.9.0 for Windows. Descriptive statistics provided basic statistical parameters for every variable: arithmetic middle (AS), standard deviation (SD). Statistical significance of differences in groups was solved with t- test for dependent samples. The level of statistical significance was set to $p=0,05$.

Results

Table 1. descriptive parameters of analyzed variables of initial and final testing with T- test results.

VARIABLE	INITIAL TESTING				FINAL TESTING				T-TEST
	A.S.	S.D.	MIN	MAX	A.S.	S.D.	MIN	MAX	
HIGH	180,68	5,52	169	190	180,68	5,52	169	190	
WEIGHT	77,62	7,78	61,9	96	77,96	7,95	61,9	96	
BMI	23,81	2,38	19,1	29,3	23,94	2,42	19,1	29,3	
MFE30V	4,54	0,25	4,01	5,2	4,71	0,23	4,01	5,01	0,00
TRB 60"	41,23	5,83	24	50	42,44	6,69	24	54	0,83
SKL	35,03	10,59	20	69	41,27	9,73	20	55	0,00
IZOM- P	2,38	1,1	1,15	4	2,12	1,1	1,18	3	0,13
IZOM- S	2,15	1,12	0,38	3,03	2,10	1,12	1,02	3,4	0,01
IZOM- L	1,19	0,37	0,2	2,17	1,23	0,40	0,48	2,2	0,90
IZOM – D	1,29	0,34	0,53	2,3	1,25	0,33	0,48	2	0,22
KUS	8,95	0,68	8,15	11,19	8,61	0,76	6,87	10,98	0,18
KOORSL	18,37	13,31	8,01	61,11	12,60	15,03	8	23	0,06
BEEP	46,06	5,56	34,4	55,7	48,37	4,55	40,87	58,55	0,22

Discussion and conclusion

T- test for dependent samples shows us that 3 out of 10 variables showed statistically significant change in final testing according to initial testing. MFE30V test showed statistically significant change because many of program exercises were strength and power or speed based so it is expected that explosiveness (sprinting) is better with players after that kind of program. Improvement also goes on inter and intra muscular coordination since that was a new motor program for all the players. Also statistically significance change is in SKL test that represent upper body part. Conclusion is that ability is neglect with football players in that level so new kind of program gave result. The similar goes for IZOM-L test which represent lower back strength.

In other test that represent strength and even agility statistically significance improvement was not shown even is maybe expected because there was not enough time or number exercises to do otherwise. In tests like KOORSL and BEEP improvement was not even expected because they represent abilities from ther domain than program goal is set like aerobic capacity or specific football technique. Conclusion is that program of various prevention group of exercises is approved with that sample of football players. Some changes in positive direction are done and less injuries during the season happen. The biggest problem of this survey is not existence of control group. This is a interesting field so improvement in upcoming surveys are expected in defining of samples, longer studies with more improved exercises.

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UTJECAJ RAZLIČITIH OBLIKA PROGRAMA NA FUNKCIONALNO MOTORIČKI STATUS NOGOMETAŠA NIŽE RAZINE

Sažetak

Cilj ovog rada je istražiti utjecaj različitih oblika preventivnog programa na motorički status i funkcionalne sposobnosti nogometasa koji će se odraziti na manji broj ozljeda. Uzorak ispitanika cine nogometasi nk belisce koji se takmiče u seniorskoj konkurenciji i to 3. Hrvatska nogometna lige istok u sezoni 2013/2014. U istraživanju je sudjelovalo 19 nogometasa (n=19; 22.61 +/- 4.3). mjerenja su provedena u dve vremenske točke, na početku pripremnog perioda inicijalno testiranje i pet tjedan nakon finalno testiranje. Osim deskriptivnih mjera (dob, visina, težina) za potrebe utvrđivanja motorickog statusa koristen i su testovi: MFE30V sprint na 30m iz visokog starta za procjenu eksplozivne snage tipa sprinta, TRB60 pretklon trupa u 60 sec za procjenu repetitivne snage trupa, SKLOT sklekovi do otkaza za procjenu repetitivne snage prsa, IZOP, IZOS, IZOL, IZOD izometrični upori za procjenu stabilnosti zdjelice i trupa, MAGKUS koraci u stranu za procjenu lateralne agilnosti, SK specifični test koordinacije sa loptom, BEEP TEST test trčanja „gore-dole“ za procjenu aerobnog kapaciteta. Provedbom T testa za zavisne uzorke dobiveni rezultati ukazuju na statistički značajne promjene u tri testa i to MFE30V, SKLOT, IZOS. Rezultati nam govore da preventivni program utječe na pozitivne promjene u nekim sposobnostima.

Ključne riječi: nogomet, prevencija, ozljede

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