Introduction

Soccer is the most popular sport in the world, with close to 270 million participants (Akbari, Sahebozamani, Daneshjoo, & Amiri-Khorasani, 2018). Soccer is a sport that is characterized by numerous and varied complex dynamic kinesiology activities that are characterized by a large number of cyclic and acyclic movements (Gardasevic, Bjelica, & Vasiljevic, 2017; Sermaxhaj, Popovic, Bjelica, Gardasevic, & Arifi, 2017). Soccer consists of various types of movements and actions like tackling, jumping, sprinting and kicking (Reilly, Williams, Nevill, & Franks, 2000; Amiri-Khorasani, Osman, & Yusof, 2009). The high specificity of loading, decision making under pressure of opponents (Hulka, & Weisser, 2017) in all four moments of play, possession of the ball, the opponent’s possession of it, the transformation after winning the ball and the transformation after losing the ball depends on the ability of players to perform certain movements of varying intensity, in different directions and the different sections of the field (Gardasevic, Bjelica, & Corluka, 2018a; Gardasevic, Bjelica, & Corluka, 2018b). They must have developed basic and specific motor abilities (Gardasevic, & Vasiljevic, 2017). Level of adaptations and time to reach at degree of adaptation according to training objectives are determining type of training which coaches may choose (Amani, Sadeghi, & Afsharnezhad, 2018). One of the specific motor skills, which should be at a high level, is a shooting ball accuracy.

The main objective of this study was to determine the level of quantitative changes of the shooting ball accuracy with U16 soccer players, under the influence of a programmed soccer training which included one preparatory period of forty-two days.

Abstract

The main aim of the research was to identify a level of quantitative changes of the shooting ball accuracy with U16 soccer players under the influence of the programmed soccer training of six weeks a summer preparation period. The training programme covered 44 training units. The research was made on a sample of 120 soccer players. For the assessment of shooting ball accuracy the three tests were used: Straight foot accuracy in the vertical target, Elevation foot accuracy in the vertical target and Elevation head accuracy in the vertical target. In the area of comparative statistics, used t-test for big paired samples. Based on the numerical values of the t-test it can be concluded that there are statistically significant differences in all three variables to estimate the shooting ball accuracy. In this research the authors were guided by the fact that this kind of training program in preparation period, where dominates the situational model training is very effective in terms of raising the shooting ball accuracy with U16 soccer players, because the model that is used in this training period abounds in exercises in which dominates the shooting ball accuracy, in straight and elevation line. The obtained results can be directed towards innovation plans and programs in the preparation period, and the adaptation of the same needs of the respective population.

Key words: soccer, soccer players, preparation period, shooting ball accuracy

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Methods

This was a longitudinal study with an aim that in the two
time-varying points determine quantitative changes of the
shooting ball accuracy in soccer players (15 years ± 6 months)
under the influence of programmed training process, which
included a summer preparation period for the competition
season in a unique cadet league of Montenegro and the cadet
league middle region of Montenegro. The training program la-
sted 42 days and was carried out on the auxiliary soccer field
of FC Sutjeska-Niksic. The training program included 44 trainer
units, within which 8 friendly matches were played.

For data processing only the results of those respondents
who have undergone a complete program of work and who
have joined the initial and final measurement are taken. This
study included a sample of 120 young cadet soccer players of
4 teams, all from Niksic. Parents of all participants signed a
consent form, which was in accordance with the Helsinki Decla-
ration. Before programmed work all respondents had passed
medical check-ups to make sure they could access the training
process. When selecting the instruments (tests) it was taken
into account that they meet the basic metric characteristics,
which means the appropriate age and objective material and
spatial conditions. For the assessment of the shooting ball ac-
curacy, the following tests were used: 1. Straight foot accuracy
in the vertical target; 2. Elevation foot accuracy in the vertical
target; 3. Elevation head accuracy in the vertical target.

Straight foot accuracy in the vertical target is performed
in an open or closed space of minimum dimensions of 30 x 5
meters. The participant stands with a ball 25 meters from the
goal. He leads the ball 5 meters with two touches and shoots it
on goal from 20 meters away from the goal. The participant has
10 knocks on the goal. Points are: hit the central goal (the goal
is 1.5 m wide)=3 points; hit the goal from the side (the goals
are 1 m wide)=2 points; hit above and beside goal=1 point.

Elevation foot accuracy in the vertical target is performed
on the football field. The participant stands with a ball 30 me-
ters from the goal. He leads the ball 5 meters with two touches
and shoots it on goal from 20 meters away from the goal. The
participant has 10 knocks on the goal. Points are: hit the goal
that the ball does not reach the ground in its path=3 points; hit
in the goal frame that the ball does not reach the ground in its
path =2 points; hit above and beside goal=1 point; if the ball
on its way reaches the ground before entering the goal=1 point.

Elevation head accuracy in the vertical target is performed
in an open or closed space of minimum dimensions of 15 x 5
meters. The participant stands with a 15 meters from the goal.
He leads the ball 5 meters his head with two touches and sho-
ots it on goal his head from 10 meters away from the goal.
The participant has 10 knocks on the goal. Points are: hit the goal
that the ball does not reach the ground in its path=5 points; hit
the goal that the ball has one touch the ground in its path=3
points; hit in the goal frame and missed the goal=1 point; hit
above and beside goal=1 point; if the ball on its way reaches
the ground before entering the goal=1 point.

Considering that these are cadet age players (15-years ± 6
months), in a sensitive period of psychophysical development,
program is tailored specifically to their age, taking into account
the time spent in the previous training process. Time structure
of the training ranged from 60 to 120 minutes, depending on
the goals and objectives of the training unit and it was divided
into 3 phases: 1. Introductory-preparatory part (25-30% of the
duration of training); 2. The main part (60-65% of the duration
of the training); 3. The final part (up to 10% of the duration of
training)

In the introductory-preparatory part of the training the
emphasis was on raising the operating temperature in chil-
dren. As a tool, various elementary games with a ball were used
that enabled work on the elementary basics of technique and
tactics, also the various polygons with exercises the shooting
ball accuracy were used. A variety of games and exercises to
increase joint mobility and strengthen muscles also applied at
this stage.

At the first stage of the main part of the training the inten-
sity is slightly increased compared to the warm-up phase and
the training program was implemented through a variety of
ball games. With a game method, the respondents were taught
and practiced soccer skills through a large number of repeti-
tions. At the second stage of the main part of the training the
players mostly had a free game on two goals that allowed them
creative activities and highlight of individual, imagination, in-
dependent thinking and hard work, applying the elements that
teach by the method of the game from the first stage of the
main part, and thus strengthening the willing quality. At this
stage of the training the intensity was the greatest. At the fi-
nal part of the training the task was lowering the physiological
curve to an optimum level, and low-intensity activities were
used: stretching and relaxation exercises, competitive game of
penalty kicks, free kicks.

Data obtained from the survey were analysed using des-
criptive and comparative statistics. In the area of descriptive
statistics for each variable both in the initial and the final state
central and dispersion parameters were processed as well as
measures of asymmetry and flatness. The hypothesis of normal
distribution of results was tested on the basis of Kolmogorov
and Smirnov test. In the area of comparative statistics, to deter-
mine differences in the variables used to estimate the shooting
ball accuracy at the start (initial state) and at the end (final
state) of the training program in the preparation period, we
used the discriminative parametric procedure Student’s t-test
for large dependent samples.

Results

In Tables 1 and 2 are shown the basic descriptive statistical
parameters of variables for estimations of the shooting ball ac-
curacy in the initial and final measurement, where the values
of central and dispersion tendency were calculated: arithmetic
mean (Mean), standard deviation (Std. D.), standard error of
arithmetic mean (Std. E.), the coefficient of variation (CV%),
minimum (Min) and maximum (Max) values, the range of re-
results (Range), the curvature coefficient Skewness (Skew) and
elongation Kurtosis (Kurt), as well as the values of Kolmogorov
and Smirnov test (K-S).

First the central and dispersive parameters of variables for
assessing the shooting ball accuracy in the initial state were
analysed (Table 1).
The aim of this study was to, based on the training work program of forty-two (42) days, determine the level of transformation of the shooting ball accuracy with U16 soccer players, under the influence of a scheduled soccer training that included one preparatory period. This study included a sample of 120 young cadet soccer players of 4 teams, all from Niksic, competing in a unique Montenegrin cadet league and in the middle region league of Montenegro. On the basis of the obtained parameters it can be concluded that the statistically significant partial quantitative effects (changes) in all the variables for estimation of the shooting ball accuracy obtained as a result of the training program applied in the preparation period. The method of work that has been applied in this training program abounds with exercises dominated by movements with ball in various directions, players are often found in unexpected situations, so that the positive transformations are not unexpected (Gardasevic, Bjelica, & Vasiljevic, 2016).

Based on the results gained, it can be noted that there are statistically significant differences in all variables for estimation of the shooting ball accuracy, and therefore can be said that there was statistically significant positive partial effects of the training program in the preparation period, and the t-test values were significant at the reliability level p<0.01 for all variables for estimation of the shooting ball accuracy.

### Discussion

The aim of this study was to, based on the training work program of forty-two (42) days, determine the level of transformation of the shooting ball accuracy with U16 soccer players, under the influence of a scheduled soccer training that included one preparatory period. This study included a sample of 120 young cadet soccer players of 4 teams, all from Niksic, competing in a unique Montenegrin cadet league and in the middle region league of Montenegro. On the basis of the obtained parameters it can be concluded that the statistically significant partial quantitative effects (changes) in all the variables for estimation of the shooting ball accuracy obtained as a result of the training program applied in the preparation period. The method of work that has been applied in this training program abounds with exercises dominated by movements with ball in various directions, players are often found in unexpected situations, so that the positive transformations are not unexpected (Gardasevic, Bjelica, & Vasiljevic, 2016).

Based on the results of t-test for large dependent samples, with the variables for estimation of the shooting ball accuracy the statistically significant differences were determined in all pairs of variables between the initial and final states, at the level of statistical significance (significance), p<0.01. It can be concluded that the training program of work in preparation period has led to the positive transformation in all variables that were estimating, by the structure of a hypothetical setting of the models, the shooting ball accuracy. In this research, the authors were guided by the fact that such a training program of work in preparation period is a very efficient way of working in terms of raising the level of the shooting ball accuracy.
cadet soccer players. The authors conclude that the summer period of 42 days, at cadet soccer players, with such training work program, is optimal for lifting the shooting ball accuracy to the level required for the competition. The gained results can be directed towards innovation of plans and programs of work in the preparation period, and adjusting the same to the needs of the talented players, because European top-level soccer clubs are continually looking for the most talented players.

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Conflict of Interest
The authors declare that there are no conflicts of interest.

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