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# EFFECTS OF A PHYSICAL TRAINING PROGRAMME ON ANTHROPOMETRIC AND FITNESS MEASURES IN OBESE AND OVERWEIGHT POLICE TRAINEES AND OFFICERS

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***ABSTRACT***

*This study investigated the impact of a 10-week training programme on the anthropometric characteristics and physical abilities of obese and overweight police trainees and officers. The anthropometric characteristics measured were Body mass (BM), body height (BH), body mass index (BMI), waist circumference (WC) and waist-to-height ratio (WHtR), while the physical ability variables included Change of direction speed ([CODS] t-test), upper-body muscular endurance (1-minute push-up) (PU), trunk muscular endurance (1-minute sit-up) (SU), and aerobic endurance (2.4km run) (RUN). A sample of 46 (n=36 obese; n=10 overweight) male police trainees (age=29.2±5.2yrs; BH=174.09±5.21cm; BM=100.55±11.99kg) were involved in a ten-week physical activity intervention study. A paired sample t-test and Cohen's d effect size (ES) found significant changes (p<0.001) in tested anthropometric (BM, BMI, WC and WHtR) and physical ability variables (T-test, PU, SU and RUN). Findings can be used as a guideline for implementing training procedures among overweight and obese police trainees and officers in order to prevent cardiovascular issues and improve their physical fitness.*

***Keywords:*** Fitness assessments; Health; Obesity; Law enforcement; Tactical athletes.

## INTRODUCTION

The problem of obesity caused by excessive adiposity is a well-known, world-wide problem affecting developed, as well as developing countries (Kopelman, 2000; Stojković *et al.*, 2017). A potential reason for this impact on developing countries is due to the fact that, as rapidly developing countries become more affluent, they are increasingly accepting of the lifestyles characterised by fast-food consumption, reduced physical activity and long working hours (Ford & Mokdad, 2008; Da Silva *et al*., 2014).

Obesity has been present across all ages, sex and racial groups, and since police officers (POs) come from the general population, they generally face a similar problem (Čvorović *et al*., 2018; Kukić *et al*., 2020b). However, research suggests that POs are less physically fit than their age-matched trainees due to the nature of their occupation (Orr *et al.*, 2018). As such, just as in the general population, POs are also prone to obesity and experience similar associated health risks due to long hours of sitting, unstable schedules and shift work, stressful work setting and irregular eating habits (Alasagheirin *et al.*, 2011; Ćopić *et al.,* 2020). Excess adiposity increases the risk of cardiovascular diseases, high blood pressure, diabetes and mortality (Stevens *et al.*, 1998; Swift *et al.*, 2014).

Along with an increase in body mass, it is also well known that the level of physical fitness drops by time spent in service among Pos, due to the reduction in physical exercise, shift work, and/or time spent at work (Sorensen *et al.*, 2000; Orr *et al.*, 2018; Ćopić *et al.,* 2020). This may be contra-productive considering the tasks of POs that can range from primarily sedentary activities to sudden vigorous physical efforts, such as crowd control, handcuffing, scaling walls or fences, foot pursuits or controlling those resisting arrest (Adams *et al.*, 2010; Dawes *et al.*, 2018). Hence, before the trainee commences their occupation as a PO, they must be prepared for such situations during their time on police training. When at the academy or college, police trainees (PTs) are exposed to a training programme designed to prepare them for the police tasks and actively engage in physical exercise once they graduate, so they continue to perform their occupational tasks and stay healthy adequately.

Based on the foregoing premise, Čvorović *et al.* (2021) found significant differences in performance and anthropometric parameters among PTs after a 12-week training programme. Their participants achieved significant reductions in body mass (BM), body mass index (BMI), waist circumference (WC), and waist-to-height ratio (WHtR), as well as improvements in push up (PU), sit up (SU) and 2.4km run test performance. Furthermore, Cocke *et al*. (2016) compared the effects of two physical training programmes on multiple fitness measures in police cadets. One group of trainees completed a randomised training programme (n=50) and the second group a periodised training programme (n=11). The randomised training programme incorporated workout-of-the-day style consisting of strength and endurance exercises spontaneously selected on the day of the training session with a focus on improving fitness-assessment performance. The periodised training approach used particular phases to increase endurance, hypertrophy, strength or power for general health and physical conditioning rather than the fitness assessments specifically. It was reported that the anthropometric and performance measures improved regardless of the training programme. However, performance measures appeared to improve more in the randomised training programme.

Similarly, Orr *et al*. (2016) assessed the impact of an ability-based training (ABT) programme in PTs. The trainees finished two stages of a training session (Session 1: n=54 trainees and Session 2: n=233 trainees) and were assigned randomly to a control group (standard group running) and an intervention group (ABT programme). The physical training programme lasted for 10-weeks with one training session weekly. Aerobic fitness was measured through 20-metre progressive shuttle run test performance and the conclusion was that implementation of ABT programmes in PTs could be useful and achieve the same or better fitness results with a lower risk of injury.

The studies mentioned above are rare examples of studies investigating the effects of applied training within the police agency on anthropometric characteristics and physical abilities. However, only Čvorović *et al.* (2021) dealt with PTs, while none of the studies investigated how the training organised by the police college or academy may affect the overweight and obese PTs. This is important because strength and conditioning in the police population is typically conducted under conditions that do not fit into normal training conditions. The coaches often work with larger groups, outdoors, without the equipment and under the command of superior officers who are not from exercise science.

## PURPOSE OF STUDY

Obesity is a common state among police force members, which further complicates their performance of professional duties after graduation of PTs. Therefore, the primary aim of this study was to investigate the impact of a 10-week training programme on the anthropometric characteristics and physical abilities of a group of overweight and obese PTs and POs. The secondary aim was to investigate to what extent the anthropometric characteristics and physical fitness can be improved after 10 weeks of training. The main hypothesis of this research study was that a 10-week planned physical exercise programme will have a significant positive influence on the anthropometric characteristics and physical fitness levels of overweight and obese PTs and POs.

## METHODOLOGY

### Experimental study design

This study utilised an intervention study design with an applied experimental approach. The programme of research commenced in March 2018 with an initial assessment of anthropometric characteristics and physical abilities. The Change of Direction Speed (CODS) was tested employing a T-test, local muscular endurance of the upper-body and trunk were assessed using a 1-minute PU and 1-minute SU tests, while aerobic endurance was assessed by conducting 2.4km run (RUN) test. The anthropometric characteristics were body height (BH), BM, BMI, WC, and WHtR. This was followed by a 10-week physical training programme, which included physical training sessions twice a day for five consecutive days a week, followed by a two-day rest period (weekend). All tests were repeated at the end of training programme.

### Participants

A sample of 46 male trainees (age=29.2 ± 5.2yrs; BH=174.09 ± 5.21cm; BM=100.55±11.99kg; BMI=33.17±3.65kg/m$^2$) were involved in the study. The PTs were drawn from the postgraduate education course and included in the training programme if they were classified as overweight (BMI>27.5 kg/m$^2$) or obese (BMI>29.9 kg/m$^2$) according to the definition provided by the World Health Organization (WHO, 2000). All PTs were attending a course from six months to a year in duration to be promoted to a higher rank, as some of them already had the rank of an officer, while other trainees did not have any rank and were attending a course to be promoted to an officer rank. All participants had passed a medical examination before joining the 10-week training programme. The participants were informed of the benefits and risks associated with participation in the research before they agreed to participate in the study by providing an oral consent.

### Ethical considerations

The research was carried out in accordance with the conditions of the declaration of Helsinki: Ethical principles for medical research involving human subjects (WMA, 2009). This study was conducted as part of a PhD dissertation for which author Miloš Stojković applied prior to the data collection. The Ethics Committee of the ethics board of the Faculty of Sport and Physical Education, University of Belgrade approved the study design and provided the ethical clearance (number 02-821/19-1).

## Measurement procedures

### *Anthropometrics*

BH and BM were measured barefoot and dressed in a T-shirt and shorts, using the SECA 769 digital weight scales and measuring rod (Hamburg, Germany), with measurements recorded to the nearest 0.5cm and 0.5kg, respectively. BMI was calculated using the formula BM(kg) / BH $(m)^2$. WC was measured around the abdomen at the level of the umbilicus (belly button), with the T-shirt removed, and using a spring-loaded Gulick measuring tape with measurements recorded to the nearest 0.5cm. In addition, WHtR was calculated as WC (cm)/BH (cm) (Jeknić *et al.*, 2018; Čvorović *et al.*, 2021).

### *Change of direction speed T-test*

Four cones were arranged in a "T" formation (Figure 1) and the trainees started the test with their feet behind the starting line at the bottom of the "T". On the whistle signal, they ran until they reached the centre cone (9.14m). After touching the cone, the trainees shuffled their feet (without crossing them over) to the right, touching the base of the right cone (4.57m) and then shuffled to the left, touching the base of the left cone (9.14m). With the same running technique, trainees then shuffled to the center cone (4.57m), and after touching it, they finally ran backwards to the starting line (9.14m). After a demonstration by the instructor, the trainees were allowed to perform a brief self-selected warm-up and one familiarisation trial on this test. The attempt was repeated if the trainee failed to touch a cone or performed the test incorrectly. The best time of two trials was recorded in seconds (Crawley *et al.*, 2016; Pauole *et al.*, 2000).

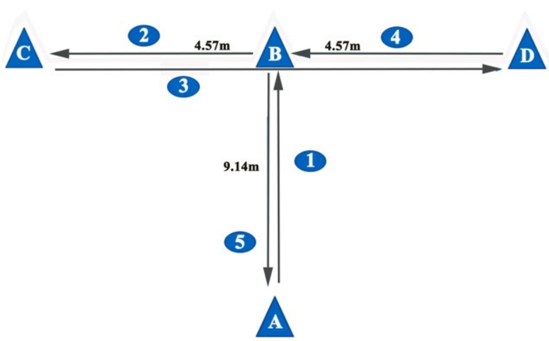


*Figure 1.* **LAYOUT OF T-TEST**

### *Push-up test*

The push-up test (PU) was conducted according to previously reported procedures (Cocke *et al.*, 2016). The trainees' hands were positioned one hand wider than shoulder-width. The starting position was with the elbows fully extended. One push-up was counted when trainees lowered their body to a position just before touching the floor with their chest and lifted their body up to their initial position. Testing ended when the trainees were unable to perform repetitions with the appropriate technique or when one minute had expired. Results were reported as the number of repetitions completed (Cocke *et al.*, 2016; Lockie *et al.*, 2019).

***Sit-up test***
All trainees began the sit-up test (SU) in the back lying position with their feet on the ground, knees bent at about 90°, arms crossed over the chest, and hands fixed on the opposite shoulder (Cocke *et al.*, 2016; Crawley *et al.*, 2016). Trainees lifted their upper body off the ground until they touched their knees with their forearms (without moving their arms from their chest), and then returned to the starting position by touching the ground with their shoulder blades. Resting in a lying position between the repetitions was not allowed. Their feet were held down to the ground during the testing by the instructor who counted only the correct repetitions. The testing ended when the trainees were unable to perform more repetitions with the appropriate technique or when one minute had expired. Results were reported in the number of correctly completed repetitions.

***RUN test***
The run test was conducted on an outdoor running track following the procedures previously described by Cocke *et al.* (2016). Trainees were allowed 15 minutes of rest after the SU test. Thereafter, a layout of the track was clearly explained and trainees were instructed to complete the 2.4km as quickly as possible. Completion times were recorded on paper before being transcribed to a computer system for further analysis. Time was recorded in minutes and seconds (to the nearest second) using a Casio stopwatch (Casio HS-70W).

**Intervention**

The physical training intervention lasted for 10 weeks. The training sessions took place twice a day (first training at 6:00 a.m. and second training at 6:00 p.m.) for five consecutive days a week, followed by a two-day rest period (weekend). Every physical training session, regardless of the nature of the session, started with a warm-up of about 10 minutes, then the main part of the training was conducted (lasting 40 minutes) and included various cardiovascular endurance and strength exercises, finishing with a cool down in which static stretching exercises were performed for about 5-10 minutes (Table 1 to follow). The intensity of training was gradually increased every two weeks by gradually reducing the rest period between exercises and increasing the number of repetitions as per the capabilities of the PTs and POs. The police officer in charge of the attendance tracked the PTs and POs attendance, whereby the adherence was mandatory (whoever missed classes without the documented proof had been removed from the course for the rank promotion). There were no recorded injuries or absences due to illness during the 10-week training programme.

**Statistical analysis**

Descriptive statistics for the basic measures of central tendency and measures of data dispersion, standard deviations, minimums and maximums were determined using the Statistical Program for Social Sciences (SPSS Statistics 20, IBM). Normality of data distribution was tested by Kolmogorov-Smirnov test. A paired sample t-test was used to test the absolute and relative (%) differences between the baseline data and after the applied exercise programme on anthropometric measurements and physical abilities, with the statistical significance level set at $p<0.05$. Cohen's (*d*) effect size (ES) for the t-test was used to identify the magnitude of the effects of the applied training programme on anthropometrics and physical abilities, with 0.2 being small, 0.5 moderate, and 0.8 large ES (Čvorović *et al.*, 2018).

***Table 1.*** **EXAMPLE OF WEEKLY TRAINING PROGRAMME AT POLICE COLLEGE (Intervention)**

| **Day** | **Morning** | **Guidelines** | **Afternoon** | **Guidelines** |
|---|---|---|---|---|
| **Sun** | *Bodyweight and cardio training*<br>Outdoor running (2km);<br>PU + Jumping jacks;<br>SU + Mountain climbers;<br>Squat + burpees | *4 sets, 30sec each exercise x 2min rest between sets* | *Flexibility and mobility exercises:*<br>Lower and Upper body stretches, Trunk stretches, Upper and Lower body mobility exercises | *Passive mobility - Holding a terminal position for 30sec* |
| **Mon** | *Strength circuit training:*<br>Outdoor running (1km);<br>triceps press, Shoulder press, Squat (viper), Bicep curl, Lunges (weight) | *3 sets, each exercise 12 reps x 2min rest between sets* | *Trunk stability and static stretching:*<br>Leg lift, Bicycle crunch, Russian twist, 15cm Hold, Superman, Plank | *6 core exercises in 3 sets with 3min rest between sets* |
| **Tue** | 2.4km/4km trial running<br>and dynamic stretching | *Preparation for final running test* | *Bodyweight training:*<br>Squat thrusters, triceps dips, reverse lunges, burpees, glute bridge | *5 exercises in 4 sets with 2 min rest between sets* |
| **Wed** | *Bodyweight and cardio training:*<br>Outdoor running (1km);<br>Step ups, Deck squats, Back extensions, Heel raises, Wall ball, Plank | *3 sets, perform each exercise for 1min x 2min rest between sets* | *Agility training:*<br>Agility ladder lateral jumps, hurdle drills, lateral shuffles with cones, 10m sprint | *3 different stations of agility on the football court, 8min each station 3min rest between sets* |
| **Thu** | *Bodyweight circuit training:*<br>Outdoor running (2km);<br>10 x PU, 20 x Burpees, 30 x Squat, 40 x SU, 40 x SU, 30 x Squat, 20 x Burpees, 10 x PU | *2 - 3 sets x 8–10min to finish each set, 3min rest between sets* | **OFF** | |

## RESULTS

The descriptive statistics for the anthropometric measurements and physical abilities across both time points are shown in Table 2.

**Table 2. DESCRIPTIVE STATISTICS FOR ANTHROPOMETRICS AND PHYSICAL ABILITIES AT BASELINE AND AT END TESTING**

| Variables | Baseline | | | End testing | | |
|---|---|---|---|---|---|---|
| | Mean±SD | Min. | Max. | Mean±SD | Min. | Max. |
| BM (kg) | 100.6±12.0 | 77.5 | 121.5 | 88.0±10.0 | 70.2 | 108.4 |
| WC (cm) | 107.7±9.2 | 88.0 | 132.0 | 96.8±9.2 | 78.0 | 122.0 |
| BMI (kg/m$^2$) | 33.2±3.7 | 27.5 | 43.05 | 29.0±3.0 | 24.51 | 37.63 |
| WHtR (n) | 0.62±0.1 | 0.53 | 0.79 | 0.56±0.1 | 0.47 | 0.73 |
| PU (n) | 14.1±7.9 | 0 | 35.0 | 28.7±8.4 | 5.0 | 53.0 |
| SU (n) | 23.4±6.5 | 10.0 | 37.0 | 36.4±5.0 | 24.0 | 46.0 |
| RUN (sec) | 1027.8±191.8 | 811 | 1566 | 693.6±86.8 | 596 | 973 |
| T-test (sec) | 16.22±1.78 | 13.28 | 21.15 | 13.9±1.5 | 11.35 | 17.87 |

BM=Body Mass WC=Waist circumference BMI=Body Mass Index
WHtR=*Waist-to-Height Ratio* PU=Push Up SU=Sit Up

Regarding the anthropometric measurements, the paired samples t-test between measures following the applied training programme were significant ($p<0.001$) for all investigated variables (Table 3). Although the magnitude of the effects was large in all variables, the major relative changes (%) occurred in BM and BMI (Figure 2)

**Table 3. PAIRED SAMPLE t-TEST AND CORRESPONDING EFFECT SIZE**

| Variables | Δ (SD) | t | *d* |
|---|---|---|---|
| BM (kg) *** | -12.55 (4.10) | 20.74 | 3.06 |
| WC (cm) *** | -10.87 (4.99) | 14.78 | 2.18 |
| BMI (kg/m$^2$) *** | -4.14 (1.33) | 21.04 | 3.10 |
| WHtR *** | -0.06 (0.03) | 14.60 | 2.15 |

* p<0.05 ** p<0.01 *** p<0.001 Δ=mean change score SD=Standard Deviation *d*=Cohen's Effect size
BM=Body Mass WC=Waist Circumference BMI=Body Mass Index WHtR= Waist-to-Height Ratio

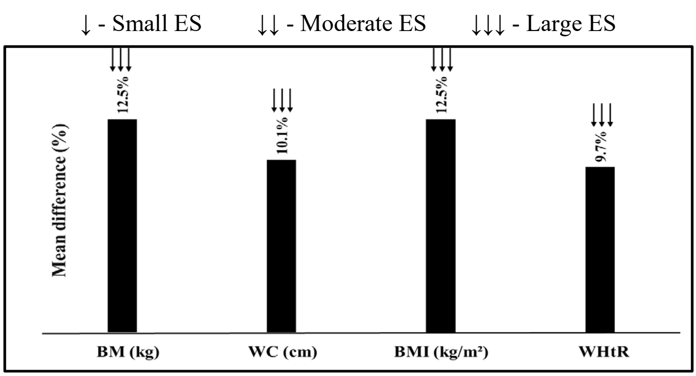


***Figure 2.*** **MEAN DIFFERENCE (%) IN ANTHROPOMETRIC MEASUREMENTS AND MAGNITUDE (ES)**

Regarding the anthropometric measurements, the paired samples t-test between measures following the applied training programme were significant (p<0.001) for all investigated variables (Table 3). Although the magnitude of the effects was large in all variables, the major relative changes (%) occurred in BM and BMI (Figure 2).

Regarding the changes in physical abilities, the applied training programme significantly, and with large magnitude, affected all investigated variables in a positive manner (performance improved) (Table 4). PU ability improved to the greatest extent, followed by SU, RUN and T-test (Figure 3).

***Table 4.*** **PAIRED SAMPLE T-TEST RESULTS AND CORRESPONDING EFFECT SIZE FOR EFFECTS ON PHYSICAL ABILITIES**

| **Variables** | **Δ (SD)** | **t** | ***d*** |
|---|---|---|---|
| PU (n) *** | 14.57 (5.18) | -19.06 | 2.81 |
| SU (n) *** | 13.02 (5.69) | -15.51 | 2.29 |
| RUN (sec) *** | -334.28 (152.48) | 14.87 | -2.19 |
| T-test (sec) *** | -2.33 (1.12) | 14.11 | -2.08 |

* p<0.05 ** p<0.01 *** p<0.001 PU=Push Ups SU=Sit Ups
Δ=mean change score SD=Standard Deviation *d*=Cohen's Effect size

↓ - small ES ↓↓ - moderate ES ↓↓↓ - large ES

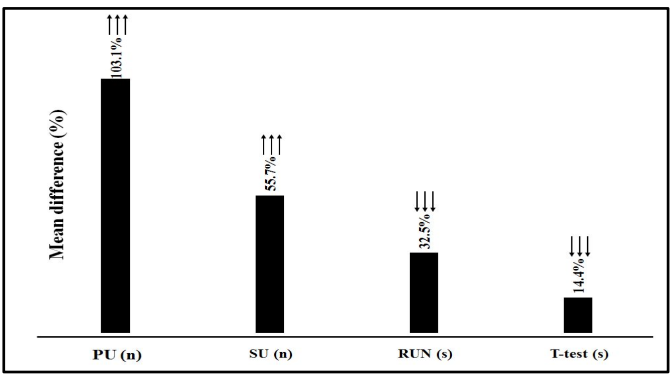


***Figure 3.*** **MEAN DIFFERENCE (%) IN PHYSICAL ABILITIES AND THEIR MAGNITUDE (ES)**

## DISCUSSION

The main findings of this study revealed that the planned 10-week training programme was highly effective, clearly showing large improvements in all anthropometric characteristics and physical abilities. Changes in anthropometric measurements and physical abilities appeared to improve health-related physical fitness, which may also improve health in general (Dawes *et al.*, 2016). In addition, improvements in body composition and physical fitness (Table 3 and 4) are important for lowering the risk of injuries. This is of great importance, considering that several studies have shown that injuries and job absenteeism are more prevalent among obese workers, which increases the probability of early retirement and greatly increases the medical costs (Cawley *et al.*, 2007; Houston *et al.*, 2009; Poston *et al.*, 2011).

Although PTs participate in organised physical training during academy training, the prevalence of obesity among these trainees has been found to increase once they graduate and become POs (Kukić *et al.*, 2017; Kukić *et al.*, 2019). In that regard, studies have shown that different approaches can be used to improve anthropometric characteristics of trainees (Cocke *et al.*, 2016; Čvorović *et al.*, 2021). Cocke *et al*. (2016) found significant improvements in BM among PTs after participating in a six-month training programme consisting of either randomised (1.9%) or a traditional periodised training model (3.8%).

Furthermore, Čvorović *et al.* (2021) found significant improvements in BM (7.50%), BMI (7.48%), WC (8.36%) and WHtR (9.62%) after a 12-week training programme among PTs. Compared to these two studies, the results from the present study showed larger reduction in BM of PTs, which could be due to training programme that was primarily focused on weight loss and where trainees were trained twice a day, five days a week, unlike the trainees who trained once a day for five days a week in the study by Cocke *et al*. (2016).

Higher training frequency could have caused larger effects even the duration of the present study was somewhat shorter (10 weeks compared to six months or 12 weeks). In addition, compared to the present study, the participants from Cocke *et al*. (2016) were fitter and had lower BM with the percentage of body fat about 17%. Similarly, the trainees in Čvorović *et al.* (2021) had lower starting BM, BMI, WC and WHtR than the trainees from the present study, thus the effects reported by them were smaller.

Considering differences in physical abilities after 10-weeks, the different variations of bodyweight exercises had a large effect on their improvement. For instance, research done by Cocke *et al*. (2016), reported significant improvements in physical abilities among PTs after participating in a six-month training programme consisting of either randomised or a traditional periodised training model. The greatest improvements were seen in the randomised training group, where the trainees improved in PU, SU and RUN test by 44.1%, 36.7% and 11.3% respectively. In a study by Čvorović *et al.* (2021), significant improvements were also achieved in PU (60.1%), SU (37.3%) and a RUN test (15.8%) after the 12-week training program among PTs.

Kukić *et al*. (2019) investigated the effects of a physical training programme and semester break period on the physical abilities of the PTs. After only two months of the semester break period from June to September, there was a significant drop in 2.4km RUN (20.3%), PU (1%) and SU (2.9%) test. However, the next semester period from September to December were followed by significant improvements in RUN (18.6%), PU (7.8%) and SU (6.6%). Observing the aforementioned studies and compared with the results of the present study, implementation of well-planned training programme proved effective in bettering physical abilities of PTs, which may improve occupational performance and health. It is of note that an excessive BM and higher abdominal adiposity may have a negative impact on aerobic capacity and fitness test scores (Ortega *et al.*, 2007; Charles *et al.*, 2008; Setty *et al.*, 2013), thereby, the attained reduction in BM and WC may have contributed in improved physical abilities.

CODS as measured by the T-test on the final testing was significantly faster by 14.4%, which was expected considering the reduction in BM experienced by the trainees. In a 16-week supervised training programme among PTs, Crawley *et al*. (2016) observed significant improvement in the T-test (5%), PU (17.3%) and SU (16.5%) after the training process. The difference in effects of training programmes could be due to the differences in initial characteristics of the participants. The subjects from Crawley *et al*. (2016) were already trained cadets, while the current participants were obese PTs and POs. As such, it could be expected that the trainees in our study had a greater space for improvement as relatively untrained participants usually respond better to a training programme (Crawley *et al.*, 2016), while fatter officers were found to perform lower in CODS performance (Kukic *et al.,* 2020). The smallest change in CODS compared to other measured physical abilities could be attributed to the training programme that was not focused on improvement of CODS. It mostly included strength and endurance workouts aimed at the reduction and excess body fats while CODS drills were implemented to once a week break that addresses training monotony.

## LIMITATIONS

Having one strength and conditioning coach working with a large group of obese trainees was regarded as one of the limitations of this study, because groups of PTs were not controlled for individual differences, meaning that one coach had to handle the within-group differences obesity level and adapt training accordingly. Another limitation was the inclusion of only male trainees. However, the agency did not allow the inclusion of female trainees. Therefore, conducting research on a sample of female trainees from Police College could be a directive for future research on this population. The use of BMI as indirect method for obesity screening is another limitation because it is exclusively based on height and weight calculation and cannot distinguish between fat mass and lean mass in measuring obesity (Alasagheirin *et al.*, 2011; Kukić *et al.,* 2020a). Uncontrolled nutrition over the weekend rest period is a study limitation, which could have influenced the training and test results. However, as this is a pragmatic research approach, these influences are expected to occur in the real-world setting.

## PRACTICAL APPLICATIONS

The physical training programme and the findings provided in this research can be used as a guideline for implementing training procedures in overweight and obese populations of PTs and POs. The results suggest that periods of dedicated training, for longer than 10 weeks may be needed in PTs who are already obese to reduce the BMI to a normal range, in order to prevent cardiovascular issues and to improve their physical fitness. Monitoring the measured variables during the training can provide insight into the changes of body composition and provide data for timely adjustment of the intensity and volume of physical activities or nutrition programme. Improving aerobic capacity, muscular endurance and CODS is of great importance for successful task performance and health. Thus, under the supervision of strength and conditioning practitioners in the implementation of exercises to develop these abilities, especially CODS training and T-test implementation, could be done even with overweight and obese PTs and Pos, but in a safe manner.

## CONCLUSIONS

The training programme in this research has greatly improved anthropometric characteristics and physical abilities among PTs and POs. The results of this study are important because it shows to what extent the anthropometric status and physical abilities can be improved in a relatively short period of time. Furthermore, it should also be noted that although the BMI was significantly reduced at the end of the training process, the trainees were still classified as obese or overweight. This is of importance as strength and conditioning specialists working with police populations may often face similar scenarios where they need to plan and facilitate a training programme among a larger group of high-risk trainees all at once. Considering the demanding tasks that this profession occasionally may require, conducting regular physical exercise and occasional physical fitness tests is of great importance in preserving physical performance and health, especially in the prevention of obesity as one of the leading public health problems. Law enforcement agencies should implement strategies to help officers be physically active either in duty hours or in their free time.

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**Conflict of interest**

The authors declare no conflict of interest.

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