

Brain Jogging Exercise and Team and Individual Sports Athletes' Concentration

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Abstract: Concentration is the key to maximal performance because the athlete must focus on every task that needs to be done. The concentration will be good if it is trained continuously through the right training method; one of them is brain jogging. This study aims to determine the effect of brain jogging exercises on the athletes' concentration of team sports and individuals. This research used experimental method with pretest-posttest design. The population was UKM UPI athletes. The sample of this study were athletes who actively practiced and competed on team and individual sports, which were taken with non-probability sampling technique. The samples were divided into two groups: experiment and control, experimental group were treated with brain jogging exercise 11 times twice a week. The control group was given brain jogging treatment. The instrument to measure concentration is Concentration Grid Test (CGT). The data analysis technique used t test. The result revealed that brain jogging exercises have a significant effect on the concentration of team and individual sports athletes, and there are significant differences in the effects of brain jogging and exercise exercises without brain jogging of athletes' and team's individual athletic concentrations. Brain jogging give significant effect on the athletes' concentration.

1 INTRODUCTION

The success of athletes in a competition is determined by several variables; physical, engineering, and psychological variables (Heinen, 2011). These variables are identified as predictors of success in a competition. Concentration is a part of the psychological aspect that should get serious attention, because athletes in the process of training and competition are often confronted with various disturbances both internal and external. Internal factors cover such aspects as athletes' own thoughts, feelings, bodily sensations that may hamper their efforts to concentrate on the job at hand. External factors on the other hand involves objective environmental events and situation that divert athletes' attention away from its intended target (Brewer, 2009). Specifically, athletes who have no concentration will have no accurate the throws, punches, kicks, and shots. The conditions that occur in athlete sports tennis do not punch accurately, the ball caught on the net, ball out, and difficult athletes put the ball in a position far from the opponent's reach

Similar problems occur in football, athletes do shooting but the ball bounced high, but his position is in front of goal (Komarudin, 2015). Such condition is a problem that often occurs in sports both team sports and individuals.

Athlete concentrations need to be trained with an appropriate psychological practice method one of which is a brain jogging exercise. Brain jogging exercise is an exercise method dominated by jogging motion using ladder media, this exercise is adopted from the Life Kinetic training developed by Kuswari in Indonesia. In principle this exercise is similar to Life Kinetic is very popular in Western Europe like Germany, the Netherlands, France, Spain. This exercise is a combination of motor activity and cognitive challenges and the training of visual perception, especially the perception of the visual field peripherals. Moving limbs in different unusual combinations, catching, and throwing objects, thus training the visual perception and limb-eye coordination, is a basic characteristic of the training (Demirakca, 2016). The essence of this research is combining different motor activities which activate and shape associative cortical fields and, at the same

time, improve the efficiency of an athlete's thought processes (Duda, 2015). Brain jogging is beneficial in improving concentration because this exercise can stimulate brain cells (Kuswari, 2014) and it is suitable for children and elderly people for individual and team sports players. Furthermore, this method is frequently used by professional athletes (Duda, 2015)

Silva and Arida (2015) human studies have shown that environmental stimuli such as physical activity habits seem to have a favorable influence on brain development. Kita (2014) stated that physical exercise can induce brain plasticity and regulate mental function, enhance learning and memory. Grünke (2014) also explains that body coordination exercises affect the brain development of children and adults. The exercise involves complex motion patterns that can stimulate cells in the hippocampus that result in improved memory. The study confirms that physical activity including brain jogging exercises has an effect on concentrations among children, adults, and even professional athletes. But the research is still general, not specifically review the different sports that is the sport of teams and individuals. The concentration of athletes in both sports is essentially the same, that is, attention focuses on the tasks that must be done without being affected by various disturbances both internal and external. But the difference is the type of disorder, the sports team is more complex in addition the athlete himself, the individual in the team, as well as the environment. While in the sport of individuals, the disorder tends to come from himself and his environment. The conditions that require athletes to have the ability to stay focused throughout his work well. The research is, therefore, formulated as follows: does brain jogging affect the concentration of individual and team athletes? Is there any significant influence of brain jogging exercises on athletes' concentrations in team and individual sports.

2 METHOD

The method was experimental with pretest-posttest control group design. The population is UKM UPI athletes. The sample was active athletes participating in team sports (basketball, football and volleyball) and individual sports (karate, archery and badminton) The sampling technique was non-probability sampling by which 34 team athletes and 32 individual athletes were obtained. The samples were divided into two groups through random assignment consisting of control group and experimental group. The experimental group was given brain jogging

training for 11 meetings, twice a week the control group was not given a brain jogging exercise but still exercised according to the sport. The instrument was Concentration Grid Test with 0.79 reliability level. The analysis was performed through t test in SPSS 21 for windows.

3 RESULTS

The data for analysis is the athlete's concentration data both for individual and team sports. The result was described in forms of pretest, posttest and gain scores of concentration for either experimental or control group. The result of the analysis was displayed in Table 1.

Table 1: The result of pretest, posttest and gain scores of concentration for either experimental or control group.

| Variables | Test | | |
|------------------------------------|---------|----------|--------|
| | Pretest | Posttest | Gain |
| Team Concentration (Experiment) | 11.353 | 20.647 | 9.294 |
| Individual Concentration | 10.438 | 20.75 | 10.312 |
| Team Concentration (Control) | 12.471 | 18.706 | 6.235 |
| Individual Concentration (Control) | 11.25 | 18.938 | 7.688 |

Based on the calculations in Table 1, it is shown that the gain of the test scores of the athletes' sports team and individual at the experimental group is greater than the control group, which means that the brain jogging treatment can improve the athlete's concentration.

To find out the effect of brain jogging exercise, T test (paired t test) was carried out. The calculation is presented as follows: From the pretest-posttest of experimental team group, It was revealed that $M = 9.294$, $SD = 1.571$, $Std. EM = .381$, $t = -24.380$, $Sig. = .000 < 0.05$. From the pretest-posttest of experimental individual sports, It was revealed that $M = 10.312$, $SD = 1.537$, $Std. EM = .384$, $t = -26.837$, $Sig. = .000 < 0.05$. From the pretest-posttest of control group, It was revealed that $M = 6.235$, $SD = 1.562$, $Std. EM = .378$, $t = -16.454$, $Sig. = .000 < 0.05$. From the pretest-posttest of control group, It was revealed that $M = 7.687$, $SD = 1.493$, $Std. EM = .373$, $t = -20.596$, $Sig. = .000 < 0.05$. The result confirmed that the athletes' concentration on team and individual sports in experimental group was $Sig. (2-tailed) .000 < 0.05$ which means that H_0 was rejected. It can be concluded that there is a significant effect of brain

jogging exercises and exercises without brain jogging on the athletes' concentrations of team sports and individuals.

Furthermore, to know the difference, which form of exercise is better between brain jogging exercises and exercise without brain jogging to the athletes' concentration of team sports and individuals, it is necessary to test the difference of two average using independent t test. The calculation is presented as follows: The result of concentration on sports team was $F = 0.002$, $Sig. = .966$, $t = 5.691$, $df = 32$, $Sig. (2-tailed) = .000$, $MD = 3.058$. While the result of concentration on individual team was $F = .019$, $Sig. = .891$, $t = 4.900$, $df = 30$, $Sig. (2-tailed) = .000$, $MD = 2.625$. The result confirmed that the athletes' concentration on team and individual sports in experimental group was $Sig. (2-tailed) .000 < 0.05$ which means that H_0 was rejected. It can be concluded that there is a significant effect of brain jogging exercises and exercises without brain jogging on the athletes' concentrations of team sports and individuals.

4 DISCUSSION

There is a significant influence of brain jogging exercises on athletes' concentrations in team and individual sports to reinforce these findings the authors cite several opinions that, physical exercise exercises in this case are very good brain jogging exercises for the brain, because: First, exercise can improve circulation so that individual nerves can get more oxygen and nutrients. Second, exercise can stimulate dopamine production, one of the mood-boosting neurotransmitters (Jensen, 2008). When brain jogging exercise is done with an adequate amount of 40-60% then the exercise can increase the production of new cells in the brain (Demirakca, 2016). The growth of new cells in the brain (neurogenesis) correlates with memory (Kitabatake, Sailor, Ming, and Song, 2007).

Neuroscientists from the University of California, Irvine found that exercise can trigger a brain-derived neurotrophic release (BDNF: brain derived neurotrophic factor), a natural substance that enhances cognition by encouraging neurons' ability to communicate with each other Gomez and Hillman (2013), BDNF which operates at the interface of metabolism and synaptic plasticity, can play a crucial role in exercise-induced cognitive enhancement. BDNF is produced and secreted in the brain to regulate the cellular processes of proliferation, development and differentiation. It is synthesized by

both neurons and glial cells and allows neurons to receive adequate nutrition to grow, develop or regenerate themselves. Throughout development, BDNF expression is strictly controlled, and its alteration can cause morphological and functional changes in the brain throughout the life course (Bernd, 2008). The results of an Irvine study in aged rats that daily did the exercises found BDNF increased in various areas of the brain, including the hippocampus that is important in memory processing. BDNF appears to accelerate the development of long-term potential (LTP: long-term memory processing), or forming memory in young rats (Jensen, 2008). Therefore, exercise in particular brain jogging exercises greatly affects mind, mood, memory, and overall health (Dishman, 2006).

The use of brain jogging exercises provides broader benefits, and works very well for the brain, especially in the formation of new synapses in the brain (Duda, 2015). On another study it was believed that physical activity in the treatment of improvement in aspects of cognitive function in older adults are becoming increasingly well established. Furthermore, acute bouts of well managed physical exercise may facilitate certain aspects of information processing in adults (Thomas, 2012). The life kinetic training was originally designed to train the coordination of athletes the difficulty of the task can easily be adapted to the capabilities of patient populations. Based on the assumption that spontaneous activity reflects the history of co-activation within a local brain network or between brain regions, we expect increases in resting-state connectivity of those brain regions probably involved in the exercises and tasks (Demirakca, 2016). In a longitudinal study, it was explained that "older adults that participate in physical activity show less cognitive decline over two-to 10-year follow-up periods. Cardiorespiratory fitness assessed at baseline predicted cognitive performance six years later in a variety of cognitive domains (working memory, processing speed, attention, and general mental functioning) (Bherer, Erickson and Liu-ambrose, 2013). Furthermore, there are significant differences in the influence of brain jogging exercises on increasing the concentration of team and individual sports. The authors cite opinion (Duda, 2015) that, brain jogging exercises are beneficial for improving the broader health of the brain's functioning through the formation of new synapses in the brain. The method is suited both for children and elderly people, for individual and team sports players (Duda, 2015).

5 CONCLUSIONS

Brain jogging exercises have a significant effect on the concentration of team and individual sports athletes, and there are significant differences in the effects of brain jogging and exercises without brain jogging of athletes' and team's individual athletic concentrations. Therefore, brain jogging exercises can be used as one method of psychological exercise to increase the concentration of athletes in both team and individual sports.

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