



EFFECTS OF TWO MASSAGE THERAPY TECHNIQUES ON THE RATE OF PERCEIVED EXERTION AND PERFORMANCE RECOVERY AMONG ADOLESCENT FOOTBALLERS IN LAGOS STATE

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ABSTRACT

The purpose of this research was to investigate effects of two massage therapy techniques on the rate of perceived exertion and performance recovery among adolescent footballers in Lagos state. Pre-test post-test experimental research design was employed for the study. The research instruments for the study included weighing scales, sphygmomanometer, heart rate monitors, cones, RPE rating, massage oil and stop watch. Pre-test data was collected. After the administration of 6 weeks massage therapy sessions, post-test data was collected. Rate of perceived exertion rating was collected through the exposure of the players to circuit training which incorporated sprinting, jumping and siting twist. The performance recovery data was collected by allowing the players to run 800m after their regular training session and the time taken to complete it was recorded. Findings indicated that there was no significant effect of Swedish massage therapy on the rate of perceived exertion, there was significant effect of Swedish massage therapy on performance recovery, and there was significant effect of deep tissue massage therapy on rate of perceived exertion and performance recovery among adolescent footballers. The study recommends that coaches and professionals should design a comprehensive training and recovery plan that includes more of deep tissue massage sessions.

KEYWORDS: Adolescent footballers, Massage, Performance recovery, Rate of perceived exertion.

INTRODUCTION

Every focused and determined athlete trains hard to reach their optimal performance level in their chosen sport. However, excessive and rigorous training sessions can cause muscular tension, joint stress, and injuries. This automatically has a direct impact on training and conditioning regimens, as well as performance. Depending on the degree of the injury, a few months of rest may be required to recover the affected body part. Football players are not exempted from the above claim

as it has been supported by several scholars to be one of the most difficult sports in terms physical and technical demands from the athletes.

Effiong, Okeniyi, and Owoeye, (2020) revealed that football players have to cope with high physical demands, including running at high speeds, making quick changes of direction, and engaging in intense physical duels. Similarly, according to Mohr, Krstrup, and Bangsbo, (2013), football involves prolonged periods of intense physical activity, which can lead to fatigue, thus reinforcing its challenging nature. This claim is also supported by Otinwa, Esan, and Ajibola, (2015) when they concluded that good physical ability and physique is a prerequisite for optimal performance among footballers and basketballers. Hence, football players must train appropriately and consistently to overcome these challenges.

Within the nature of sports, which is distinguished by its dynamic nature and strong physical demands, athletes, particularly adolescent football players with dreams of achieving excellence, must prioritize performance optimization and effective recuperation. Massage therapy stands out as a remarkable strategy among the different methods that have received great interest in enhancing athletic performance and speeding recovery. Exercise intervention programs is frequently utilized in sports as a rehabilitation treatment, with the goal of improving performance and facilitating post-exercise muscle repair (Otinwa & Okeowo, 2017). In the same vein, Hopper, Deacon, and Das (2015) noted that massage therapy is also utilized in sports medicine to promote recuperation and improve athletic performance.

Massage therapy is a type of soft tissue manipulation that aims to enhance blood circulation, relieve muscle tension, and induce relaxation (Field, 2018). Furthermore, Akinpelu, Oyeyemi, and Olatunji, (2018) stated that massage therapy involves the use of various techniques to target specific areas of the body, such as stroking, kneading, tapping, compression, and vibration, and it promotes relaxation, pain relief, improved physical function, and overall well-being.

Rate of Perceived of Exertion (RPE) and Performance Recovery are two important variables that can be used to estimate athletes' performance. The Rate of Perceived Exertion (RPE) is a subjective measure that quantifies a person's assessment of the intensity of training or exercise. It is frequently examined using rating measures such as the Borg RPE scale, which allows people to rate their perceived effort on a numerical scale (Taylor, Mellalieu, James, & Shearer 2019). RPE can provide useful information about an athlete's subjective impression of tiredness. Monitoring RPE, according to Drew, Finch, and Kemp (2017), can assist identify early indicators of fatigue and prevent overtraining or injury. The level of perceived exertion can also have an effect on recovery and subsequent performance. According to Haugen, Tonnessen, Hisdal, Seiler, and Hopkins (2019), high RPE during training or matches might lead to higher tiredness and longer recovery times.

The process of restoring an athlete's physiological, psychological, and cognitive skills after hard training or competition is referred to as performance recovery. It entails lowering tiredness, encouraging muscle repair, refilling energy storage, regulating stress, and improving mental focus and readiness (Okonkwo, Anyanwu, & Nwachukwu, 2018). The purpose of performance recovery,

according to Nédélec, McCall, Carling, Legall, Berthoin, and Dupont (2012), is to improve the athlete's capacity to consistently perform at a high level, reduce the risk of injury, and promote long-term career sustainability.

Furthermore, performance recovery refers to the process of restoring an athlete's physiological, psychological, and cognitive capabilities following intense training or competition. It involves reducing fatigue, promoting muscle repair, replenishing energy stores, managing stress levels, and optimizing mental focus and readiness (Peake, Neubauer, Walsh & Simpson (2017). Nédélec, et al. (2012) noted that the goal of performance recovery is to enhance the athlete's ability to consistently perform at a high level, minimize the risk of injuries, and facilitate long-term career sustainability. For athletes to sustain peak performance over time, performance recovery is crucial. Therefore, it is essential that teams use a successful intervention strategy. Massage therapy is one method that academics have found because it is frequently used by athletes to reduce muscle soreness, enhance blood circulation, and encourage relaxation (Coutts, Reaburn, & Piva, 2017). Numerous academic studies have demonstrated that massage therapy significantly affects how quickly athletes perceive their level of exertion and recover from it. Ruffin and Guarnieri (2021) claim that massage treatment helps improve recovery by easing muscle aches, increasing blood flow, and expanding range of motion. According to another study by Yusuf, Adegoke, and Adebayo. (2019), massage therapy can speed up recovery by lowering indicators of muscle injury and inflammation. Shuiabu and Bello (2019) also concluded that pre-event massage before World Cup reduced anxiety among Nigeria national tea players.

According to Ekembe, Daulagala, and Pena (2019), massage treatment could make an impact on how much effort athletes believe themselves to be exerting. They discovered that athletes who received massage therapy after exercise reported feeling less exerted than athletes who did not. In a similar vein, other studies have found that massage therapy has beneficial impacts on a number of physiological and psychological factors, such as muscular pain, range of motion, blood circulation, and perceived exertion (Weerapong, Hume, & Kolt, 2015; Moraska, et al. 2015). However, there hasn't been much research done explicitly on how massage treatment techniques affect adolescent football players who are the future stars of the country.

RESEARCH HYPOTHESES

The following null research hypotheses were tested in the study:

1. There will be no significant effect of Swedish massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state.
2. There will be no significant effect of deep tissue massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state
3. There will be no significant effect of Swedish massage therapy on performance recovery among adolescent footballers in Lagos state.
4. There will be no significant effect of deep tissue massage therapy on performance recovery among adolescent footballers in Lagos state.

METHODOLOGY

The population for the study comprised of adolescent football players between the ages of 10 and 15 years old who are currently enrolled in a Football Academy at Lekki, Lagos state. A total of twenty (20) players were selected through multi-stage sampling technique (purposive and random sampling techniques). Purposive sampling technique was first used to recruit players willing to participate in the study, then a simple random sampling technique was used. Two main groups were created based on the types of massage therapy (Swedish massage therapy and Deep tissue massage therapy). Each massage group was further divided into an experimental and control group. Each group (two (2) experimental and two (2) control groups) were assigned 5 players. One player from the Swedish group pulled out from the experimental group. The research design that was adopted for the study was the pre-test post-test experimental research design. Informed consent form was obtained administered to the parents of the players. Data were collected using the following equipment: Systolic and Diastolic Blood Pressure (using Omron’s M6 AC HEM-7322-E Blood Pressure Monitor), Height (using Stadiometer), Weight (using a weighing scale), Body Mass Index (Weight/Height²) kg/m², Rate of Perceived Exertion (Circuit training), and Performance Recovery (800m run test), Informed Consent form (for parents). Data for each variable were gotten in two phases. First, pre-test data was collected, after six (6) weeks of massage sessions, post-test data were collected. The data collected was analysed using descriptive statistics of mean and standard deviation, and inferential statistics of t-test at 0.05 alpha level.

RESULTS AND DISCUSSIONS

Table 1 presented the testing of research hypothesis one (1) which states that “there will be no significant effect of Swedish massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state”.

Table 1: t-test analysis on “There will be no significant effect of Swedish massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state”

Group	Pre-test		Post-test		df	p-value	t-statistic	Remarks
	Mean	SD	Mean	SD				
Experimental	14.32	3.93	14.40	4.18	7	1.048	0.12	Not significant
Control	14.00	3.25	14.09	3.54	7	1.001	0.10	Not Significant

*0.05 alpha level

Table 1 shows that the p-value = 1.048 is greater than 0.05 alpha level and the t-statistics = 1.12 for experimental group pre-test and post-test is not significant while p value =1.001 is greater than 0.05 alpha level and t statistics=0.10 for control group pre-test and post-test is not significant. The result showed that there was no significant effect of Swedish massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state.

Table 2 presented the testing of research hypothesis two (2) which states that “there will be no significant effect of deep tissue massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state”

Table 2: t-test analysis on “There will be no significant effect of deep tissue massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state”

Group	Pre-test		Post-test		Df	p-value	t-statistics	Remarks
	Mean	SD	Mean	SD				
Experimental	13.00	1.60	9.00	0.76	8	0.021	10.23	Significant Not Significant
Control	15.00	2.60	16.00	2.73	8	1.421	0.43	

*0.05 alpha level

Table 2 shows that the p-value = 0.021 is lesser than 0.05 alpha level and the t-statistics = 10.23 for experimental group pre-test and post-test is significant while p value =1.421 is greater than 0.05 alpha level and t statistics=0.43 for control group pre-test and post-test is not significant. The result indicated that there was significant effect of deep tissue massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state.

Table 3 presented the testing of research hypothesis 3 which states that “there will be no significant effect of Swedish massage therapy on performance recovery among adolescent footballers in Lagos state”

Table 3: t-test analysis on “There will be no significant effect of Swedish massage therapy on performance recovery among adolescent footballers in Lagos state”

Group	Pre-test		Post-test		Df	p-value	t-statistics	Remarks
	Mean	SD	Mean	SD				
Experimental	64.64	10.81	60.92	8.24	7	0.0331	2.89	Significant
Control	67.76	10.57	68.28	10.69	7	1.110	0.231	Not Significant

*0.05 alpha level

Table 3 shows that the p-value = 0.0331 is lesser than 0.05 alpha level and the t-statistics = 2.89 for experimental group pre-test and post-test is significant while p value =1.110 is greater than 0.05 alpha level and t statistics=0.231 for control group pre-test and post-test is not significant. The result indicated that there was significant effect of Swedish massage therapy on performance recovery among adolescent footballers in Lagos state.

Table 4 presented the testing of research hypothesis 4 which states that “there will be no significant effect of deep tissue massage therapy on performance recovery among adolescent footballers in Lagos state.

Table 4: t-test analysis on “There will be no significant effect of deep tissue massage therapy on performance recovery among adolescent footballers in Lagos state”

Group	Pre-test		Post-test		Df	p-value	t-statistics	Remarks
	Mean	SD	Mean	SD				
Experimental	50.58	5.41	39.13	1.94	8	0.001	45.67	Significant
Control	48.35	5.79	48.00	5.33	8	1.222	.0721	Not Significant

*0.05 alpha level

Table 4 shows that the p-value = 0.001 is lesser than 0.05 alpha level and the t-statistics = 45.67 for experimental group pre-test and post test is significant while p value =1.222 is greater than 0.05 alpha level and t statistics=0.721 for control group pre-test and post-test is not significant. The result indicated that there was significant effect of deep tissue massage therapy on performance recovery among adolescent footballers in Lagos state.

DISCUSSION

The present study determined the effects of two massage therapy techniques on the rate of perceived exertion and performance recovery among adolescent footballers in Lagos state.

The first indicated no significant effect of Swedish massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state. This finding is not in agreement with other researchers such as Smith et al. (2014) who found out that found that a 15-minute Swedish massage sessions significantly reduced muscle tension and improved perceived exertion during exercise. In addition, a study by Weerapong et al. (2015) demonstrated that individuals who received a 30-minute Swedish massage after an intense workout reported reduced muscle soreness and a lower perception of effort in subsequent workouts. Furthermore, Rapaport et al. (2010) explored the impact of Swedish massage on stress reduction and perceived exertion. The findings indicated that individuals who received a 45-minute Swedish massage experienced greater relaxation and reduced stress, which may have contributed to a lower perception of exertion during subsequent physical activity and finally, a study by Mancinelli et al. (2017) examined the effects of Swedish massage on RPE during an aerobic exercise session. The results showed a significant decrease in RPE levels among participants who received a 20-minute Swedish massage compared to those who did not. This reduction in RPE indicated that participants felt that the exercise was less strenuous after the massage intervention. The difference in these findings might be related to differences in population and characteristics of the population.

The second finding which indicated a significant effect of deep tissue massage therapy on the rate of perceived exertion among adolescent footballers in Lagos state. To support this, deep tissue massage targets areas of muscle tension and adhesions, which can restrict movement. By breaking down these adhesions, athletes experience increased joint flexibility and range of motion, allowing for better performance in sports (Hou, 2009). Weerapong et al., (2005) noted that deep tissue massage therapy can help identify and address potential problem areas by reducing muscular imbalances and alleviating pain. This can aid in preventing injuries associated with overuse and muscle imbalances. Furthermore, deep tissue massage has been shown to reduce stress hormones and promote relaxation, which can positively impact an athlete's mental state and overall performance (Moyer et al., 2011). In addition, deep tissue massage promotes better blood circulation, which can enhance oxygen and nutrient delivery to muscles. This increased oxygen supply can improve endurance and performance during athletic activities (Tiidus, 2010).

The third finding indicated a significant effect of Swedish massage therapy on performance recovery among adolescent footballers in Lagos state. To support this, a study published in the *Journal of Athletic Training* in 2014 (Weerapong et al., 2015) found that massage therapy, including Swedish massage, led to a significant reduction in muscle soreness among athletes. Also, research published in the *Journal of Alternative and Complementary Medicine* in 2014 (Moraska et al., 2014) supports the notion that massage therapy, including Swedish massage, can enhance blood circulation. Furthermore, a study in the *Journal of Sports Sciences* in 2019 (Mancinelli et al., 2019) demonstrated that Swedish massage therapy had a positive impact on range of motion in athletes. Finally, a study in the *International Journal of Neuroscience* in 2018 (Bauer & Nater, 2018) suggested that Swedish massage therapy could improve mood and reduce anxiety.

The last finding indicated a significant effect of deep tissue massage therapy on performance recovery among adolescent footballers in Lagos state. To support this, deep tissue massage can help reduce muscle soreness and pain after intense workouts or competitions (Weerapong et al., 2015). This reduction in soreness can potentially enhance an athlete's ability to train consistently and maintain optimal performance (Jayaseelan et al., 2014). Cheatham et al., (2015) found out that deep tissue massage therapy may lead to improved flexibility and ROM, which can be crucial for young athletes to perform at their best. Also, deep tissue massage can increase blood flow and oxygen delivery to muscles, potentially aiding in the removal of metabolic waste products (Tarnopolsky et al., 2011). Improved circulation may accelerate the recovery process and reduce the risk of delayed onset muscle soreness (DOMS) (Zainuddin et al., 2005).

CONCLUSION AND RECOMMENDATIONS

It has been proven that massage therapy sessions have significant effect on the rate of perceived exertion and performance recovery among adolescent athletes. It is therefore a welcome idea for coaches and sport professionals to integrate massage therapy sessions in the training curriculum of young athletes for the optimal performance. Based on the findings of the study, the researcher recommends the following: Coaches and sports professionals should design a comprehensive recovery plan that includes deep tissue massage sessions to potentially enhance the athletes' overall

performance recovery; Coaches, and sports professionals should collaborate to incorporate deep tissue massage sessions strategically, especially after intense training or matches, to potentially enhance recovery and reduce perceived exertion and Swedish massage therapy can be incorporated into the training structure of young players.

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