Special journal of the Medical Academy and other Life Sciences
Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

Football Training: Prophylaxis of Hypertension and Prediabetes in Malaysia

Muhammad Danish Bin Jazlan[12]
[1]International Medical Institute, Kursk State Medical University
[2]Public Health, Charisma University

Abstract

According to the 2019 National Health and Morbidity Survey (NHMS), 3.4 million Malaysians are affected by at least two of the three major noncommunicable diseases (NCDs), i.e., diabetes, hypertension, and high cholesterol. The fundamental issue in Malaysia is that individuals are unwilling to attend the hospital for periodic examinations and to seek preventative medical care. It is necessary to adapt football training as a hobby and concurrently as a preventative measure against the NCDs as it appears to be the optimal strategy. In Germany, a prospective interventional study was conducted. Statistical analysis using IBM SPSS Statistics version 26 revealed that providing middle-aged hypertensive patients with football training can improve blood pressure control and minimize the need for antihypertensive medication. Using SPSS version 22, it has been demonstrated in a randomized control trial in the Faroe Islands that football training combined with professional nutrition counseling had a greater effect on metabolic and cardiovascular health prediabetes individuals aged 55 to 70 than expert dietary advice alone. At the state level, Selangor has greatly progressed in health sector reform. Initiatives to minimize noncommunicable diseases have received special attention. This study implies that the mission and vision of the Selangor Health and Sports Council align. After a comprehensive assessment, a viable policy for integrating football training as a preventative intervention should be considered.

Keywords: Football, noncommunicable diseases, hypertension, T2DM, Selangor Sports Council, Ministry of Health Malaysia, Ministry of Youth and Sports Malaysia.

Special journal of the Medical Academy and other Life Sciences
Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

Football Training: Prophylaxis of Hypertension and Prediabetes in Malaysia

With more than 3.5 billion followers worldwide, Football is one of the most watched sports. Due to its exhilarating gameplay and quick-paced action, this fascinating sport has gained a sizable fan base. There is no doubt that Football is one of the best sports out there, regardless of whether you are a dedicated participant or a casual viewer. Today, millions of individuals love playing and watching Football.

In the globe, diabetes mellitus and hypertension are among the most prevalent disorders and cardiovascular risk factors, respectively, and as people age, these conditions become more prevalent. Patients with type 2 diabetes mellitus (T2DM) frequently have elevated blood pressure levels, which are considered to at least partially reflect the effects of the underlying insulin resistance on the renal and vascular systems. Contrarily, emerging data indicate that abnormalities in glucose metabolism are more frequent in hypertensive people, suggesting that the pathogenic link between diabetes mellitus and hypertension is two-way (Vasilis et al., 2018).

Football, hypertension, and T2DM are all related in a substantial scientific manner. FooFootball'simary audiences and the risk factors for prediabetes and prehypertension coincide. Football is a popular activity among males and females who are young and middle-aged. On the other hand, obesity, smoking, physical inactivity, excessive alcohol use, and a diet high in sodium and low in potassium are risk factors for hypertension and T2DM.

Nur et al. (2018) mentioned that the most recent National Health and Morbidity Survey (NHMS) in Malaysia for noncommunicable disease(NCD) risk factors in 2015 showed an overall prevalence of hypertension of 35.3% among adults 18 years of age and older, while the NHMS reported a prevalence of diabetes in 2019 of 23.6% for those with abnormal fasting plasma

glucose (FPG) in the non-diabetic range (FPG 5.6 mmol/L-6.9 mmol/L) at the time of the survey. This estimate covers around 5 million adult Malaysians at risk of developing diabetes in the future due to likely prediabetes in 2019 (National Health and Morbidity Survey [NHMS], 2019).

Within this scope, this article will provide evidence that recreational Football positively reduces blood pressure and controls blood glucose levels. Thereby with the supporting scientific data, a proposal will be made to promote football training as a non-pharmacological measure and early prevention of hypertension and T2DM in Malaysia, specifically at the state level, if not the federal level.

Methods

The primary type of data used in the creation of this article is qualitative. The strategy assumes that the prevalence of hypertension and T2DM represents the current situation. The NHMS captured the most recent NCD statistics for 2015 and 2019. The first study in Germany examined and documented a prospective interventional trial that demonstrated the advantages of football training for people with hypertension. In the second study, a randomized control trial was carried out to determine the effect of football training and nutrition on the Faroe Islands' pre-diabetic group. The author wrote this paper from start to finish, including the analysis and data-collecting phases.

Hypertension study design

Utilizing IBM SPSS Statistics, version 26, statistical analysis was carried out. Based on the information supplied, descriptive statistics such as frequency means with standard errors, minimum and maximum values, and SD (variance) were first computed (Scrander et al., 2021).

Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

Hypertension study participants

The football group consisted of 103 participants, whereas the control group comprised 105. One hundred one persons made comprised the control group in total. After a year, 86 people completed the final examination (Scrander et al., 2021).

Hypertension study objectives

The study's main goal was to show that after a year, the football group had significantly lower office blood pressure (OBP), ABPM, and/or the quantity or dose of antihypertensive medications than the control group. The outcome criterion was established as a decrease in SBP of at least 5 5 mmHg and/or in DBP of at least 2.5 mmHg after 1 year, a decrease in self-measurement or ABPM of at least 5 or 2.5 mmHg after 1 year, and/or a decrease in the number (at least one) or dosage (at least a reduction in the existing dose by half) of antihypertensive medications after 1 year (Scrander et al., 2021).

Hypertension statistical analysis

Utilizing IBM SPSS Statistics, version 26, statistical analysis was carried out. Based on the information supplied, descriptive statistics such as frequency means with standard errors, minimum and maximum values, and SD (variance) were first computed (Scrander et al., 2021).

Diabetes study design

A randomized controlled trial was used in this investigation in Faroe Island. Skroradal et al., (2018) reported that over 12 days, the individuals came to the lab four times. Subjects had fasting blood samples and an oral glucose tolerance test during the initial visit (OGTT). The resting heart rate and blood pressure were also measured. DXA scans were used to determine body composition on the second visit and measurements of body weight, waist, and hip

DOI: https://doi.org/10.58676/sjmas.v1i1.4

circumferences. A test of an ascending cycle of exercise volume, measuring maximum oxygen uptake (VO2max), pulmonary ventilation (VE), and maximum heart rate, was administered to patients during the third visit (HRmax). Glycemic kinetics during the OGTT served as the main objective, with the lipid profile, body composition, blood pressure, resting heart rate, and VO2 max serving as supplementary endpoints. A trained nutritionist provided nutritional guidance during a 3-hour group session at the fourth appointment.

Diabetes study participants

A total of 117 Faroese citizens between the ages of 55 and 70 were diagnosed with prediabetes (HbA1c of 5.8% (40 mmol/mol)) and invited to participate in the study. After receiving written and verbal explanations of the experimental procedures and related hazards, 55 individuals (28 men and 27 women) consented to participate in the study. The football and dietary advice group (F+D; n = 32) and the dietary advice group (D; n = 23) were then randomly allocated to the subjects. To achieve a balanced gender distribution in both groups, men and women were randomly assigned in different batches. Participants finished the F+D intervention. Group D'sD'srticipants (n = 23) did not leave early. There were 50 people in the final sample (Skoradal et al., 2018).

Diabetes study objectives

A 16-week intervention was followed by an oral glucose tolerance test (OGTT). Additionally, blood pressure measurements, maximum oxygen uptake (VO2 max), and body composition were made (Skoradal et al., 2018).

Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

Diabetes statistical analysis

In order to do a statistical analysis, SPSS version 22 was used. A two-way mixed ANOVA design with repeated factor "condition" and factor "group" (F+D vs. D) was used for the analyses (pre-intervention vs. post-intervention). The Bonferroni post hoc test was used to assess the data when significant main effects were found. The significance level is $P<0.05$ (Skoradal et al., 2018).

Results

Impact of football training on a hypertensive patient.

Schrader et al. (2021) conducted a prospective interventional study in which the participants were divided into two groups. The football group (n = 103) engaged in structured 90-minute training sessions once each week under the supervision of trainers who held Deutscher Fußball Bund licenses. Comparisons were made between a control group (n = 105) and hypertensive patients who were at least 45 years old and had not exercised in some time. The main goal is to assess reduced OBP, 24-hour ABPM, and/or lower antihypertensive drug dosage. The findings are overwhelming, as OBP levels considerably fell in the football group from 142.6/87.9 to 130.8/81.8 mmHg (P 0.001), whereas values slightly increased in the control group (NS). While there was a modest increase in the control group, ABPM readings drastically dropped in the football group. After the trial, the OPB and ABPM mean values in the football group were considerably lower than those in the control group (systolic P 0.001, diastolic P = 0.017). When compared to the control group, significantly more members of the football group were able to lower their blood pressure (football group: 16, control group: 6), while more members of the control group increased their antihypertensive therapy (football group: 3, control

group: 14) (P 0.001). The football group lost 3 kg, while the control group gained 1.7 kg, according to the secondary endpoints (P 0.001). In conclusion, providing middle-aged hypertension patients with football training can optimize blood pressure management and reduce the need for antihypertensive medication.

Impact of football training on a prediabetic patient.

Skoradal et al. (2018) conducted a randomized control trial study investigating the effects of football training and diet control for patients aged 55 to 70, men and women who were prediabetic. The study was done over 16 weeks by measuring the patient's glucose level, body composition, blood pressure, and maximal oxygen uptake (VO2 max). Fifty prediabetic subjects (age: 61±6 years, BMI; 29.6±4.7 ; VO2max 22.3±5.7 mL min–1 kg–1) were randomized into 2 groups. The first group was designed to participate in football training and dietary advice(F+D ; n=27), and the second group participated only(D; n=23). Football training was planned for group F+D twice a week, with each session taking around 30-60 minutes and diet control, while group D received dietary control only. At the beginning of the study, an oral glucose tolerance test(OGTT) was done, and it was taken for the second time after the completion of the study period, which was 16 weeks. Both groups showed lower fasting blood glucose (0.4±0.5 mmol·L–1) ($P<0.05$) and lower OGTT blood glucose. Nevertheless, the values in group F+D were lower than those in group D ($P<0.05$) at 60 minutes (9.0±2.7 vs. 10.6±2.9 mmol·L–1) and 120 minutes (5.7±1.6 vs. 7.5±2.4 mmol·L, respectively) -1). VO2 max increased by 14% in group F+D, and the change in score was greater ($P<0.05$) compared with group D, 2%. Mean arterial pressure in group F+D decreased more than in group D (–8±9 vs. –4±11 mmHg) ($P<0.05$). The fat loss in group F+D was greater than that in group D (–3.4±2.8 vs. –1.2±2.0 kg)

DOI: https://doi.org/10.58676/sjmas.v1i1.4

(P<0.05), and the increase in lean body mass was also greater in group F+D than in group D (0.7±1.5 vs. – 0.3±1.6 kg) (P<0.05). In conclusion, in women and men with prediabetes aged 55 to 70, football training combined with expert dietary advice has a stronger overall impact on metabolic and cardiovascular health than expert dietary advice alone.

Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

Discussion

The three primary NCDs, diabetes, hypertension, and high cholesterol, affect 1.7 million Malaysians, while another 3.4 million people have at least two NCDs, according to the 2019 National Health and Morbidity Survey report. Selangor has advanced the reforming of the health sector significantly at the state level. The initiatives to reduce NCDs have received particular focus. The Iltizam Selangor Sihat (ISS) program will continue due to RM65.6 million in funding allocated by the state government for public health initiatives (Sulyn, 2022).

Chief Minister Dato' Seri Amirudin Shari emphasized that Selangor has shown significant progress through the increase of public health allocations from the overall development allocation every year, from 4.7 percent in 2020 to 5.1 percent in 2021 and 5.8 percent in 2022, during the presentation of the 2023 Selangor Budget at the Selangor State Legislative Assembly. The health of the populace, which is the country's most significant resource, is something we constantly take seriously. He said, "We think that healthy people are the foundation of economic strength, particularly in fostering employment and enhancing a nation's production." (Sulyn, 2022).

On the other hand, Amirudin stated that the Selangor Sports Council (MSNS) sports development program would be given an RM7 million allocation during the budget's presentation on 25 November 2023. The project to create and restore sporting facilities is still in progress, and RM2.24 million has been spent to support sports development and athletic events. According to the state executive councilor for sports Mohd Khairuddin Othman, MSNS will continue the current sports development program in the coming year to identify potential new talent at the grassroots level (Khairul, 2022).

DOI: https://doi.org/10.58676/sjmas.v1i1.4

Conclusion

This work reflects that the Selangor Health and Sports Council's objective and vision align with the scientific data that shows football training as a significant preventative tool for T2DM and hypertension. A sensible policy for using football training as a preventative measure should be considered after a thorough assessment.

Special journal of the Medical Academy and other Life Sciences
Vol. 1 No. 1 (2023) 01/16/2023
DOI: https://doi.org/10.58676/sjmas.v1i1.4

References

Vasilis, T., Clicerio, G.V., James, B. M., & Ele, F. (2018). Hypertension and Diabetes Mellitus. *Hypertension,* 71(3), 422-428. https://doi.org/10.1161/HYPERTENSIONAHA.117.10546

Nur, A. M., Mohd, A. O., & Yi Yi, K., Balkish, M. N., Jane, L. M., Wan, S. R., Halizah, M. R., Hamizatul, A. A., Tania, G. R., & Muhammad, F. M. (2018). Prevalence, awareness, treatment and control of hypertension in the Malaysian population: Findings from the National Health and Morbidity Survey 2006-2015. *J Human Hypertens*. 32(8-9), 617-624. https://doi.org/10.1038/s41371-018-0082-x

National Health and Morbidity Survey. (2019). *Official Portal Institute for Public Health Ministry of Health Malaysia.* http://www.iku.gov.my/nhms/

Schrader, B., Schrader, J., Vaske, B., Elsässer, A., Haller, H., del Vecchio, A., Koziolek, M., Gehlenborg, E., & Lüders, S. (2021). Football beats hypertension: Results of the 3F (Fit&Fun with Football) study. *Journal of Hypertension,* 33(11), 2290-2296. https://doi.org/10.1097/hjh.0000000000002935

Skoradal, M. B., Weihe, P., Patursson, P., Mortensen, J., Connolly, L., Krustup, P., & Mohr, M. (2018). Football training improves metabolic and cardiovascular health status in 55 to 70 year old women and men with prediabetes. *Scand J Med Sci Sports*, 28(1), 42-51. https://doi.org/10.1111/sms.13081

Sulyn, C. (2022, November 25). *Over RM65 mln allocated for public health, RM45 mln for Iltizam Selangor Sihat.* Selangor Journal. https://selangorjournal.my/2022/11/over-rm65-mln-allocated-for-public-health-rm45-mln-for-iltizam-selangor-sihat/

DOI: https://doi.org/10.58676/sjmas.v1i1.4

Khairul, A. H. (2022, March 29). *MSN Selangor receive RM7 mln for sports development.* Selangor Journal. https://selangorjournal.my/2021/03/msn-selangor-receive-rm7-mln-for-sports-development/