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PROMOTING MEN'S HEALTH IN A COMMUNITY: STRATEGIES FOR HEALTHCARE PROFESSIONALS FOCUSED ON PHYSICAL ACTIVITY AND LIFESTYLE HABITS

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Abstract

Background: Physical activity (PA) and healthy lifestyle habits directly influence physical health and reduce the risk for chronic lifestyle diseases. An interdisciplinary, community-based approach, informed by baseline information on PA and lifestyle habits, can play an important role in promoting men's health.

Objectives: The objectives of this study were to determine and describe PA levels and lifestyle habits of a sport and non-sport group of adult males and determine whether an association existed between PA levels and lifestyle habits.

Method: A quantitative research design was used in this case-control study. Data was collected using a self-developed demographic questionnaire and two standardised questionnaires, the International Physical Activity Questionnaire—Short Form (IPAQ-SF) and the Belloc and Breslow Seven Lifestyle Habits Questionnaire.

Results: A total of 102 males aged between 25 and 35 years were included in this study. The only comorbidity reported was hypertension (5.9%). The self-reported PA levels of 51% of the participants in the sport group were classified as health-enhancing, while 27.5% of the participants in the non-sport group were classified as inactive. The two groups were comparable regarding healthy lifestyle habits, such as eating breakfast, not smoking and minimal alcohol consumption. However, cross tabulation of PA levels with lifestyle habits showed that no participant in the sport group exhibited low levels of PA combined with poor lifestyle habits.

Conclusion: The baseline information on PA and lifestyle habits of males obtained in this study supports the suggested strategies for healthcare professionals. Through these strategies, healthcare professionals can support communities to increase their PA levels and educate them on healthy lifestyle habits to reduce the risk of chronic lifestyle diseases.

Keywords: community health strategies, lifestyle habits, men's community health, physical activity

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INTRODUCTION

Many adults in Europe still die prematurely because of poor lifestyle habits,[1] with Philip et al. also describing the prevention of chronic lifestyle diseases (CLD; also referred to as non-communicable diseases [NCDs]) as an emerging health priority in developing countries.[2] This is further confirmed by the Organisation of Economic Cooperation and Development (OECD) countries' statistics that described more than 3 million premature deaths (i.e., under the age of 75 years), of which approximately 1.9 million could have been prevented and 1 million treated through better prevention and healthcare interventions.[3] Preventative measures are aimed at addressing poor lifestyle habits, such as poor diet, obesity, physical inactivity, smoking, hypertension and consumption of excessive alcohol, which can lead to health risks.[1] In OECD countries, preventable mortality rates are 2.5 times higher among men than women because of different exposure to risk factors (e.g., smoking).[3] These health risks include an increased risk of developing chronic lifestyle diseases, such as cardiovascular disease (CVD) and/or type 2 diabetes mellitus (type 2 diabetes);[4,5] both affecting the general health status and current state of well-being of many in our modern society.[6] Unhealthy lifestyles observed worldwide led to one of the United Nations' (UN) 17 sustainable development goals (SDG; i.e., Goal 3) for 2030, namely, to improve the global general health of all individuals.[4] SDG 3 explicitly refers to healthy living and promoting well-being amongst individuals of all ages through various health objectives.[4] One of these objectives is the one-third reduction in premature mortality rates because of chronic lifestyle diseases by 2030.[4]

Physical activity (PA) is one of the most important actions that are taken to improve mental and physical health, prevent chronic lifestyle diseases[7] and improve life expectancy.[8] Apart from PA, healthy lifestyle habits also improve the general health of an individual by lowering the risk of developing chronic lifestyle diseases, becoming seriously ill or premature mortality.[9] Prescribing PA and providing advice on healthy lifestyle habits are some of the key competencies of health professionals used as behaviour modification to improve lifestyle patterns and increase longevity in individuals.[10]

Being physical therapists, the researchers realised the importance of gaining baseline information on PA and lifestyle habits which could serve as evidence to inform community-based strategies to support the UN's SDG 3. In order to promote healthy lifestyles through improved PA and good lifestyle habits, recreational sport (i.e., sport) as a viable alternative was investigated. In order to pursue these goals, the following two research objectives were set:

- To determine and describe the PA levels and lifestyle habits of recreational sport participating and non-recreational sport participating (i.e., non-sport) adult males in a specific community.
- To determine whether any association exists between PA levels and lifestyle habits in recreational sport-participating and non-sport-participating adult males.

Male participants were chosen as study participants as it was found that males, in general, are more physically active than females and are more prone to participate in recreational sport activities.[11] The participants were stratified according to age, and the study included participants aged 25–35 years, as it has been reported that in the context of South Africa a decrease in PA activity is observed after leaving the school.[12] Lifestyle habits adopted after leaving the school and entering the adulthood tend to carry through with increase in age; therefore, setting healthy lifestyle habits in early adulthood is beneficial in the long term.[13] A focus on modifiable risk factors for NCD should, however, be maintained throughout the lifespan to decrease the negative health impact that these risk factors could have. In men, globally, unhealthy lifestyle choices remain the root cause of NCD. This is exacerbated by the

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fact that many men do not realise the impact of poor lifestyle habits on their health and neglect regular health screening to identify risk factors for NCDs.[14]

LITERATURE REVIEW

According to the World Health Organisation (WHO),[15] "health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Presence of a chronic disease often influences the general health of an individual.[16] In order to improve communities' general health globally, strategies have been introduced to reduce the worldwide burden of diseases. The UN has fixed 17 SDGs for the year 2030.[4] These goals are aimed to encourage relevant stakeholders and health professionals on how to improve the general health of the global community.[4]

There are many recognised health benefits associated with increased PA levels and healthy lifestyle habits.[17] The main physiological benefits of PA are the improvement of, or the increase in muscular strength, and the improvement in aerobic capacity. PA also improves cognitive function, reduces stress and anxiety, and improves self-confidence.[18] The progressive muscle relaxation obtained from leisure-time PA specifically reduces anxiety and psychological distress.[19] Health promotion can potentially enable people to increase control over their health (including PA levels and lifestyle habits) and subsequently improve their quality of life (QoL).[20] These interventions prescribed by health professionals are seen as non-invasive treatment methods[21] and should be based on the current general health status of the individual and aimed at restoring the well-being and function.[22] Health professionals are equipped to promote a healthy lifestyle and prescribe PA[21] during their contact with a wide variety of patient populations, ranging from healthy sport participating individuals to chronically ill patients.

Kime et al. (2020) reported that first-contact healthcare professionals, such as doctors and nurses, are committed to advocate PA and healthy lifestyle choices, and feel moderately confident to provide more general advice on these topics.[23] However, they are not confident in, for example, providing more specific guidelines on PA, are not sure of referral options and/or the availability of resources to enhance PA within communities.[23] Other members of the extended healthcare team, such as physical therapists, dieticians and fitness professionals, could play an invaluable role in filling this gap in primary healthcare (community) settings. These professionals could provide community-based programmes to promote health and to prevent disease[22] or support local communities and community organisations involved in programmes promoting PA.[23] As there are many recognised health benefits associated with increased PA levels and healthy lifestyle habits,[17] this could form the foundation of community-based programmes. Increased levels of PA are also strongly associated with improved lifestyle habits.[24] In return, healthy lifestyle habits, such as eating regular and healthy meals, getting enough sleep, and participating in PA, improve an individual's general health.[9]

Within the global context, where one in four adults are inactive (28%),[25] higher inactivity was identified in high income countries (37%) than in middle- (26%) and low-income countries (16%). In response to these high levels of inactivity, the WHO's Global Action Plan on PA is aimed to reduce physical inactivity by 15% in 2030, which aligns with SDG 3.[25] Achieving higher levels of activity amongst people of all ages and abilities will require a collective effort within countries and communities. This could be achieved through community-based programmes, where healthcare professionals also advise and support these initiatives.[25] Albert et al. (2020) called for an integrated approach from all healthcare professionals to promote PA.[26] With such an integrated approach, physicians would be responsible for regular PA assessment and follow-up while continuously communicating with the broader healthcare team. As training professionals regarding assessment and promotion of PA, physical therapists and exercise specialists are responsible for

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prescribing exercise and educating the public on the relationship between PA and NCDs.[26] On community level, these efforts could be supported by nurses and fitness professionals as part of the integrated team. Fitness professionals, such as personal trainers and sport coaches, are rarely included as part of the healthcare team, but could play an important role in extending the promotion of PA beyond the clinical healthcare setting into communities.

Besides recognised PA activities, such as cycling, walking, swimming and recreational sport, Olson eet al. (2018) further emphasize that work, domestic or gardening duties, and leisure activities can contribute to an individual's PA levels.[27] Within the context of South Africa, it is especially important to note that everyday PA, such as walking as a mode of transport, or to gain access to the public transport system, contributes to the PA of individuals. This could provide some explanation for physical inactivity being slightly less in middle- and low-income countries, as reported by the WHO.[25] WHO released PA guidelines to empower the public to improve their level of PA[28] and ultimately their general health status. These guidelines are also accepted globally and align with UN's SDG 3. The American College of Sports Medicine (ACSM) guidelines advise a minimum of 150–300 min of moderate-intensity aerobic exercises or 75–150 min of vigorous aerobic exercises per week to achieve health benefits.[29] The intensity of exercise can be measured according to calorie expenditure, oxygen uptake and metabolic expenditure, referred to as the *metabolic equivalent of task* (MET). MET is the unit of energy expenditure, and according to the World Confederation of Physical Therapy,[30] one MET equals to the energy used while sitting. The MET value for various exercises is then calculated accordingly. MET minutes per week can be supplemented by participation in a recreational sport (or leisure-time) activity, with recreational sport having the added benefits of improved social support and acting as a coping mechanism for everyday stressors because of the support from teammates.[8]

Leisure-time PA includes all types of activities that one participates in voluntarily and in one's free time, and is usually based on personal preferences and requirements. Leisure-time activities could include exercise regime, such as walking, dancing and recreational sport, and/or could include household activities, such as gardening.[31] Despite the numerous and widely reported benefits of PA, only 43% of South African males participate in leisure-time PA.[28] The reluctance of these individuals to participate in leisure-time activities could be ascribed to internal barriers (e.g., lack of self-motivation or self-esteem) and/or external barriers (e.g., safety or lack of facilities),[32] or the absence of structured programmes offered to men in South Africa. Several recreational sport-based programmes, aimed at men, exist in other countries, mostly with the goal to support males to reach the health benefits associated with increased PA levels.

One of the well-known and well-researched recreational sport programmes for men in the United Kingdom is the Football Fans in Training (FFIT) programme, delivered through professional sport clubs. Based on the positive outcomes of this programme, Gray et al. (2013:1) reported on the "potential of professional sports club settings to engage men in health promotion activities."[33] The football club settings were appealing to male participants as they felt comfortable in such "masculine" settings.[34] Other positive aspects of the programme, as reported by participants, included the lifestyle education approach followed, rather than a diet-focused approach to weight loss; the optimised group setting, which included a smaller group size and continuous guidance to coaches on the delivery of the programme; and the optimisation of PA components to include a variety of activities as well as education on different PA options.[32] Another initiative within the football environment is health promotion initiatives delivered in/by English professional Football Club Community Trusts (FCCT).[35] These initiatives include different actions, such as weight management programmes, mental health programmes and educational programmes related to healthy lifestyle

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habits. Even though deemed mostly positive in addressing health needs and establishing collaborative partnerships within communities, challenges do exist, such as funding and evaluating these (more informal) interventions.[35]

When moving beyond the professional sports settings, the "Men on the Move" programme, as a community-based PA intervention, also reported positive results in improving PA and decreasing health risks in adult Irish males.[36] The programme, which also focused on structured PA in a group setting, combined with health education sessions, highlighted the possibilities of successfully implementing such initiatives in a more informal community-based setting.[36] The results from this study hold potential for similar programmes to be implemented in under-resourced and developing countries, such as South Africa, where the prevalence of NCDs remains high. Such programmes could also provide a platform for more research on NCDs and the impact of similar programmes on the prevalence thereof. Philip et al. (2018) attributed the reason for fewer NCD-studies from the developing world to the overburdened and financially challenged public healthcare systems of those countries.[2] The sustainability of such community-based programmes, however, remains problematic. Strobl et al. (2020) postulated that "capacity building for health promotion is a relevant precondition for sustainable, health-related changes in community settings."[37] In their programme, Action for Men (A4M), implemented in rural German communities, they aimed to build and report on community capacity development for health promotion and PA programmes for older males to inform sustainability considerations in the future community-based programmes.[37]

In an environment where resources and sustainability are problematic (such as developing countries), a different approach to health promotion to prevent NCDs might be required. One such example is the Boundaries for Life initiative, implemented in the United Kingdom.[38] In this programme, health checks were offered at cricket matches, as part of a population-wide health screening for people aged more than 40 years. The uptake of health checks was significantly high in comparison to other sport settings, such as football and rugby, with many participants reporting on the convenience of the service.[38] Cricket is a recreational, leisure-time sport played worldwide on various levels, and participation can be sustained throughout the lifespan.[39] Through their systematic scoping review, Bullock et al. (2022) suggested that (recreational) cricket could be a source of PA providing health benefits to individuals and enhancing their quality of life.[39] However, they proposed more research on the well-being of cricketers of all genders, age groups and levels of play, as well as research into the possibilities of cricket as a PA intervention.[39] Acknowledging that most studies included in the systematic scoping review (78%) were from Australia, the United Kingdom and South Africa, the possibility of cricket as a recreational sport or cricket settings as health-screening settings to address the burden of NCDs was evident.

With limited information available in a South African population on the PA levels and lifestyle choices of recreational sport (cricket) and non-sport participants, our study aimed at gaining baseline information in this field. From this baseline information, further initiatives could be suggested to improve both PA levels and healthy lifestyle habits.

METHODOLOGY

Study design

A quantitative case-control study research design was used to compare the PA levels and lifestyle habits of recreational sport participating and non-sport participating adult males.

Participant sampling and recruitment

Participants in this study were divided into case (sport) and control (non-sport) groups based on their recreational sport-participating or non-sport-participating status. Stratified sampling, according to age, was used to include the participants in the age range of 25–35 years. The case and control groups were equally matched according to age.

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The case (i.e., sport) group consisted of recreational cricketers who participated in amateur cricket. The study population included all 28 amateur cricket clubs forming part of promotional league in a South African city. The promotional league consists of six promotional A and six promotional B teams, each with 12 cricketers who follow the same training regime and have the same number of matches. Five of the 28 clubs were randomly selected as a study sample, and 51 study participants were recruited from these five clubs.

The control (i.e., non-sport) group consisted of adult males from five provincial government departments in the same city who did not participate in any organised recreational sport. The provincial government departments included were the Departments of Health, Education, Agriculture, Land Reform and Rural Development, Roads and Public works, and Social Development. In all, 51 participants were recruited and included in the control group.

Questionnaires as an outcome measure

Data was collected using one self-developed demographic questionnaire (to collect information on age, occupation, language and comorbidities) and two standardised questionnaires: the International Physical Activity Questionnaire—Short Form (IPAQ-SF) and the Belloc and Breslow Seven Lifestyle Habits Questionnaire.

The IPAQ-SF is a standardised, self-administered questionnaire that measures PA levels in any given population. Three levels of intensity of PA are included, namely, walking, moderate-intensity activities and vigorous-intensity activities. Each question inquires for the time (in minutes) and the number of days on which these activities were performed in the last 7 days to calculate the MET-minutes per week. The total MET-minutes per week can be calculated according to the IPAQ scoring protocol.[40] Firstly, MET-minutes per week are calculated according to a formula which includes the type of activity (i.e., walking, moderate and vigorous), the duration of the activity in minutes per session, and the number of days per week on which the activity was performed. The IPAQ formulas for calculating the MET-minutes per week per activity intensity levels are as follows:

- Walking MET-minutes per week = 3.3 × walking minutes × walking days.
- Moderate MET-minutes per week = 4.0 × moderate-intensity activity minutes × moderate-intensity days.
- Vigorous MET-minutes per week = 8.0 × vigorous-intensity activity minutes × vigorous-intensity days.

Secondly, the MET-minutes per week per activity intensity level (as calculated according to the above-mentioned formula) are then added to calculate the total MET-minutes per week.

Based on the total MET-minutes per week, the IPAQ protocol identifies three categories for the measurement of overall activity levels:

- Inactive (less than a total of 600 MET-minutes per week).
- Minimally active (600, but less than 3000 MET-minutes per week).
- Health-Enhancing PA (HEPA) active (a total of at least 3000 MET minutes per week or vigorous activity on at least 3 days, with a total of at least 1500 vigorous MET-minutes per week).

The IPAQ-SF was found to be a reliable tool to measure the level of PA in a given population,[41] with a Spearman's ρ value = ±0.8 and a criterion validity median of ρ = ±0.30, which was comparable to most other self-reported validation studies.

The Belloc and Breslow Seven Lifestyle Habits Questionnaire is a standardised questionnaire that measures the practice of current healthy lifestyle habits based on the causes of chronic lifestyle diseases.[42] The seven optimal lifestyle habits included in the questionnaire are as follows: eating three meals a day, having breakfast every day, participating in moderate PA for at least two to three times a

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week, not smoking, reduced alcohol consumption, having 7–8 hours of sleep at night, and maintaining a healthy body weight.[42] This questionnaire has been used in previous studies to determine lifestyle habits.[43–45] The lifestyle habits of participants are classified as healthy, moderately healthy or poor using measure-specific criteria. Participants are required to indicate their current lifestyle habits by answering "yes" or "no" to the seven healthy habit questions posed. The "yes" responses are allocated a numerical score of 1, and the "no" responses a numerical score of 0. The scores are tallied to give a total score out of 7. The total score is then used to classify each individual's level of healthy lifestyle habits.[24] A score of 6–7 positive responses is classified as a healthy lifestyle, 4–5 as a moderately healthy lifestyle and 3 or less positive responses as a poor lifestyle.

The questionnaires were pre-tested on 10% of the sample size of both case and control groups to determine the appropriateness and comprehensibility of the questions. The pilot study also tested the proposed study procedure and determined the time required to complete the questionnaires. No changes were made to the study procedure or data collection tools following the pilot study; therefore, the results from the pilot study were included in the main study.

Study procedure

Ethical clearance was obtained for the study from the Health Sciences Research Ethics Committee, Faculty of Health Sciences, University of the Free State, Bloemfontein, South Africa (HSREC 91/2017). Permission was also obtained from the Northern Cape Cricket Board, the Director-General of the Northern Cape, and heads of the respective government departments. Permission was also obtained to use standardised questionnaires for the purpose of this study.

Study participants from the participating cricket clubs were recruited via appointments set up by team managers. The team managers invited players selected for the club teams for the season to the appointment. As these players were invited by the team managers as active members of the league cricket teams, the researcher did not specifically record attendance at training sessions and matches. Government employees from five government departments were recruited during their weekly departmental meetings. Potential participants were informed about the study, and those who agreed to voluntarily participate in the study and met the inclusion criteria were included in the respective groups.

Inclusion criteria for the recreational sport participating group were as follows:

- All male recreational cricketers playing in the randomly selected cricket clubs during the season when the study was conducted.
- Adults aged between 25 and 35 years.
- Participants who provided written informed consent for their participation.

For the non-sport participating group, the inclusion criteria were as follows:

- Males who do not participate in organised recreational sport.
- Adults aged between 25 and 35 years.
- Participants who provided written informed consent for their participation.

Hard copies of the questionnaires were handed to the included participants, and a researcher was available to clarify any uncertainties. After completion, the sets of questionnaires for each participant were immediately placed in a sealed box, only accessible to the researcher.

The coded demographic data and that for the IPAQ-SF questionnaire and the Belloc and Breslow Seven Lifestyle Habits Questionnaire were entered into an Excel spreadsheet. The researcher double-checked the coded data to confirm correctness. Thereafter, an external individual further verified the accuracy of the captured data by comparing coding on questionnaires with the captured data in the

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Excel spreadsheet. Confidentiality of participants' information was maintained by utilising numbers for each participant instead of personal identifiable information. Hard copies of the data were stored in a locked cabinet to which only the researcher had access and the electronic data files were saved as password-protected documents on the researcher's computer.

Data analysis

Descriptive statistics were calculated, namely, frequencies and percentage values for categorical data and medians and percentiles for numerical data per group. The groups were compared by means of the Signed Rank test for paired numerical data, and McNemar's test for 2 × 2 paired categorical data or Bowker's test for symmetry if the tables were larger than 2 × 2. The analysis was done by the Department of Biostatistics, University of the Free State.

RESULTS

Demographic characteristics

Demographic characteristics of the participants, which are summarised in Table 1, included age, occupation and the presence of comorbidities of interest. The participants were classified according to age, with the age in both groups ranging between 25 and 35 years, with a median age of 28 years.

Most participants in the non-sport participating group were administration clerks (37.2%) and their spoken language was Setswana (41.2%). In the

TABLE 1. Demographic Characteristics

Variable (n = 102)	**Sport group (n = 51) Frequency (%)**	**Non-sport group (n = 51) Frequency (%)**	**McNemar test**
Employment			
Unemployed	3 (5.9%)	0	1.0
Employed	48 (94.1%)	51 (100%)	
Occupations			
Admin clerk	8 (15.7%)	**19 (37.2%)**	1.0
Medical professional	1 (2%)	8 (15.7%)	
Finance sector	7 (13.7%)	9 (17.7%)	
Professional cricketer	9 (17.7%)	0	
Sport coach	4 (7.8%)	0	
Education sector	3 (5.9%)	5 (9.8%)	
Mine worker	5 (9.8%)	0	
Language			
Afrikaans	24 (47.1%)	20 (39.2%)	**0.01***
English	**21 (41.2%)**	10 (19.6%)	
Setswana	6 (11.8%)	**21 (41.2%)**	
Comorbidities			
Hypertension	4 (7.8%)	2 (3.9%)	0.41
None	**47 (92.2%)**	**49 (96.1%)**	

**A value equal to or less than 0.05 was considered as statistically significant.*

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recreational sport participating group, the majority (17.7%) were professional cricketers and their spoken language was Afrikaans (47.1%). Most participants in the sport (92.2%) and non-sport (96.1%) groups reported not having any comorbidity. The only comorbidity reported was hypertension, by 7.8% in the sport group and 3.9% in the non-sport group. Other comorbidities included in the questionnaire were type 2 diabetes, high cholesterol, obesity, congestive cardiac failure, and cardiac arrhythmia.

Lifestyle habits

The practice of healthy lifestyle habits of participants (according to the Belloc and Breslow questionnaire) is reported as frequencies with percentage values in Table 2.

Most of the sport participants reported participating in regular PA (94.1%) and getting sufficient sleep (47%), compared with non-sport participants (74.5% and 13.7%, respectively). The groups' eating habits as well as habits regarding tobacco use, maintaining a healthy body weight and alcohol consumption were comparable; however, smoking was slightly higher in the sport group, with alcohol consumption slightly higher in the non-sport group.

The classification of lifestyle habits as healthy, moderately healthy and poor are presented as frequencies with percentage values in Table 3.

Most participants in both groups presented with moderately healthy lifestyle habits, and an equal number (7.8%) of participants in both groups were classified as healthy according to their self-reported lifestyle habits (see Table 3). More participants in the non-sport group reported having poor lifestyle habits (45.1%) than in the sport group (35.3%). A median score of four healthy lifestyle habits (out of a possible seven lifestyle habits) was met by participants in both groups.

Physical activity levels

The IPAQ was used to determine the levels of PA of participants. The total MET-minutes per week

TABLE 2. The Practice of Healthy Lifestyle Habits

Lifestyle habits (n = 102)	**Sport group (n = 51) Frequency (%)**	**Non-sport group (n = 51) Frequency (%)**	**McNemar test**
Eat three meals a day	14 (27.4%)	8 (15.6%)	0.11
Eat breakfast	22 (43.1%)	30 (58.8%)	0.14
Participate in regular physical activity	**48 (94.1%)**	**38 (74.5%)**	**<0.01***
Get 7–8 h of sleep	**24 (47.0%)**	**7 (13.7%)**	**<0.01***
Non-smoker	24 (47.0%)	28 (54.9%)	0.47
Maintaining of healthy body weight	35 (68.6%)	38 (74.5%)	0.56
Consumption of little or no alcohol	36 (70.5%)	33 (64.7%)	0.51

**A value equal to or less than 0.05 was considered as statistically significant.*

TABLE 3. Classification of Lifestyle Habits per Group

Classification of lifestyle habits (n = 102)	**Sport group (n = 51) Frequency (%)**	**Non-sport group (n = 51) Frequency (%)**	**McNemar test**
Healthy lifestyle habits	4 (7.8%)	4 (7.8%)	0.57
Moderately healthy lifestyle habits	29 (56.9%)	24 (47.1%)	
Poor lifestyle habits	18 (35.3%)	23 (45.1%)	

**A value equal to or less than 0.05 was considered as statistically significant.*

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TABLE 4. MET-Minutes per Week

MET-minutes (n = 102)	**Sport group (n = 51) Median (range)**	**Non-sport group (n = 51) Median (range)**	**Signed Rank test**
Vigorous MET-minutes/week	1920 (0–34,560)	0 (0–2880)	**<0.01***
Moderate MET-minutes/week	720 (0–5040)	480 (0–9600)	0.01
Walking MET-minutes/week	495 (0–12,474)	330 (0–7920)	0.01
Total MET-minutes/week	3045 (720–40,500)	1125 (0–17,520)	**<0.01***
Sedentary time	300 (0–600)	420 (0–560)	**<0.01***

MET: metabolic equivalent of task.
**A value equal to or less than 0.05 was considered as statistically significant.*

were reported as medians with ranges in Table 4. The median reported as the range of the data is wide and contains outliers, i.e., non-parametric data.

In the current research, sport participants reported achieving more vigorous, moderate, and walking MET-minutes per week than the non-sport group (see Table 4). Hence, as anticipated, the overall PA (total MET-minutes per week) of the sport group was also found to be significantly higher than the non-sport group (see Table 4). The results of the classification of PA levels of the participants as inactive, minimally active and HEPA active, based on MET-minutes per week, are presented in Table 5.

No participant in the sport group was classified as inactive, while 27.5% of the participants in the non-sport group were classified as inactive. HEPA active level classification was achieved by 51% of participants in the sport group, compared with only 9.8% of participants in the non-sport group (see Table 5).

Physical activity levels and lifestyle habits

The PA levels classification (Table 3) was cross tabulated with the lifestyle habits classification (Table 5) and is presented in Table 6.

Most of the participants in both groups were classified as minimally active with moderately healthy lifestyle habits (33.3%). However, the difference between the two groups was observed in the sport group, with no participant classified as inactive with poor lifestyle habits, while in the non-sport group 19.6% of participants had such combined levels (see Table 6). Additionally, 7.8% of participants in the sport group presented with HEPA active levels in combination with healthy lifestyle habits, while no participant in the non-sport group presented with this combination.

DISCUSSION

Lifestyle habits play an important role in enhancing an individual's general health status[24,46]

TABLE 5. Classification of Levels of Physical Activity Based on MET-Minutes per Week

Level of physical activity (n = 102)	**Sport group (n = 51) Frequency (%)**	**Non-sport group (n = 51) Frequency (%)**	**McNemar test**
Inactive	**0 (0%)**	**14 (27.5%)**	**<0.01***
Minimally active	25 (49%)	32 (62.7%)	
HEPA active	**26 (51%)**	**5 (9.8%)**	

HEPA: health-enhancing physical activity.
**A value equal to or less than 0.05 was considered as statistically significant.*

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TABLE 6. Physical Activity and Lifestyle Habits

Groups (n = 102)	Physical activity levels	Lifestyle habits			Bowker test
		Poor frequency (%)	Moderate frequency (%)	Healthy frequency (%)	
Sport group (n = 51)	Inactive	0	0	0	0.27
	Minimally active	8 (15.8%)	**17 (33.3%)**	0	
	HEPA active	10 (19.6%)	12 (23.5%)	4 (7.8%)	
Non-sport group (n = 51)	Inactive	10 (19.6%)	4 (7.8%)	0	**<0.01***
	Minimally active	11 (21.6%)	**17 (33.3%)**	4 (7.8%)	
	HEPA active	2 (3.9%)	3 (6%)	0	

HEPA: health-enhancing physical activity.
**A value equal to or less than 0.05 was considered as statistically significant.*

as well as in increasing life expectancy.[47] The most important lifestyle habits related to the optimal general health status of an individual are a healthy diet, regular exercise, a healthy body weight, minimal alcohol consumption and no smoking,[48] as also included in the Belloc and Breslow's questionnaire often used in health-related studies. Xiao et al. (2022) have recently reported that unhealthy lifestyle habits, such as smoking and alcohol consumption, are predominantly men-specific health issues.[49] When considering the results of our study conducted amongst adult males in a South African population, some specific results regarding sleep, diet, alcohol consumption and smoking as lifestyle habits are highlighted below.

Less than 7 hours of sleep every night has been found to negatively influence an individual's general health status.[50] The sport group reported on longer sleeping hours (47%) than the non-sport group, where only 13.7% reported getting 7–8 hours of sleep (see Table 2). Garber et al. (2011) indicated that enhanced sleep quality and duration is one of the many benefits of PA,[28] which supports the findings of our study.

Breakfast is universally identified as the most important meal of the day, as at least 20% of our daily energy intake is consumed through breakfast.[51] The energy consumed is slowly released throughout the morning and influences an individual's cognitive performance, improves mental alertness, improves mood, and provides fuel to the body.[51] Skipping breakfast could therefore negatively influence the physical and mental health status of an individual. Spence (2017) found that the younger generation is less likely to consume breakfast.[51] As study participants were in the age group of 25–35 years, this could explain the results from this study (see Table 2), where only half of the participants (51%) reported regular intake of breakfast. Additionally, it is important to note that only 21.6% of study participants reported on eating three meals a day (see Table 2).

Interestingly, alcohol consumption amongst study participants of this study was lower than reported in the literature for both sport (29.5%) and non-sport groups (35.3%; see Table 2). Findings for the non-sport group were closer to the results of a study conducted in Canada, indicating 40% of men reporting alcohol use (and even unhealthy drinking behaviour).[52] In the United States, alcohol consumption is reported as being even higher, with 61.2% by 26–29-year-old and 60.7% by 30–34-year-old males.[53] When comparing the percentage of smokers in this study (see Table 2) with results provided by Statistics South Africa,[54] both groups had a slightly higher percentage of smokers, namely, 53% in the sport group and 45.1% in the non-sport group. The average percentage of smokers in South Africa within the same age group is 43.5%. For the age group of 25–34 years, Elflein (2020) reported

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the worldwide prevalence of tobacco smoking as 20.2%, which is much lower than reported by males in this study.[55]

It is expected that healthy lifestyle habits would be associated with high PA levels.[9,28,56] However, the results in this study showed that regardless of their level of PA participation, both groups had only moderately healthy lifestyle habits, thus somewhat different than the results obtained by Bezner (2015).[56] Keates et al. (2017) observed that healthy lifestyle choices were also influenced by environmental and social factors as well as the socio-economic environment.[5] Against the background of participants, aged 25–35 years, not necessarily making better lifestyle choices, irrespective of PA levels, the presence of co-morbidities is relevant. Hypertension, as the only comorbidity reported in our study (see Table 1), was comparable with that of males aged between 18 and 39 years in the United States. Globally, the occurrence of hypertension among adult males (older than 19 years) is 20%, thus being higher than that reported in the present study.[6] With increase in age there is reduction in the elasticity of blood vessels, which can also be brought on earlier in life because of poor diet or lack of physical exercise. Thus, the literature has discovered PA to be one of the most important lifestyle habits to lower the risk of CVD, reduce hypertension and obesity[17] and lower the risk of type 2 diabetes mellitus.[57]

The ACSM (2017) recommends between 500 and 1000 MET-minutes per week to achieve health benefits and reduce early morbidity and CVD risk.[58] As cited by Kaminsky and Montoya (2014),[59] the WHO states that at least 1200 MET-minutes per week is required to provide health benefits, with higher MET-minutes per week associated with still greater health benefits.[17] In our study, according to the median values of MET-minutes per week, both groups (see Table 4) achieved the required MET-minutes per week to attain health benefits. This demonstrates that MET-minutes per week can be accumulated through a variety of physical activities, including recreational sporting activities. This agrees with the research that demonstrates that PA to achieve health benefits can be accumulated by including activities from many domains, such as occupational, transport (public transport), recreational and household chores.[60] Accumulating PA by everyday activities can be supplemented by recreational sport to achieve higher MET-minutes per week. This could be observed in the sport group of this study that presented with more than double the median MET-minutes per week (see Table 4). Linked to this, no participant in the sport group was classified as inactive (see Table 5), compared to 27.5% participants in the non-sport group. Additionally, 19.6% of these inactive participants also had poor lifestyle habits (see Table 6), which confirms that higher PA is associated with better lifestyle habits.[9,28,56]

Various authors have illustrated the benefits of interventions being community-based, supporting the notion of primary preventative healthcare, and instilling a sense of responsibility and value in their health.[10,61] A study conducted in Africa further supported health promotion in communities for the primary prevention of chronic lifestyle diseases, based on two pillars, namely, community engagement and health professional empowerment.[62] Furthermore, Elsborg et al. (2019) promoted the implementation of sports-based recreation within communities not only to allow community members to engage in a meaningful and motivating activity but also for the health-promoting aspects and positive impact it could have on the social and psychological domains of community members' lives.[63]

Health professionals can play an important role in promoting PA and healthy lifestyle habits by means of education, behaviour modification and improved lifestyle habits.[10] Such interventions can result in increased longevity of individuals and ultimately a reduced burden of diseases.[10] Healthy lifestyle habits were stabilised and improved in a 12-week behavioural intervention study directly conducted by health professionals and trainers.[64] This could highlight the benefits of community-based initiatives delivered by healthcare professionals as experts in the field of PA and healthy

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lifestyle habits. The authors are of the opinion that health professionals in South Africa could take the lead in establishing community-based strategies, comparable with the existing and successful programmes presented across the globe, to broaden the network (and extend positive health outcomes for men) to the African continent. Such community-based strategies for men could increase PA levels and improve knowledge on healthy lifestyle habits, as also suggested by Xiao et al. (2022).[49]

Based on the discussion of the results of this study and the recent literature, the following community-based strategies are recommended:

- Education on PA levels and healthy lifestyle habits.
- Advancing recreational sport opportunities for men in communities (e.g., cricket).
- Establishing effective healthcare referral systems within the community.

Education on PA levels and healthy lifestyle habits

As an initial step, healthcare professionals can build partnerships with local recreational cricket clubs by offering health screenings for players, as piloted in our study. Based on the results of such screenings, healthcare professionals can support the team managers in advocating healthy lifestyle habits amongst cricket players and educating the coaching staff on optimal PA guidelines. This could be achieved through regular health information sessions and individual feedback on health screening results. Bullock et al. (2022) found greater PA levels and higher quality of life in former cricket players,[39] supporting the possible long-term effects that could be achieved by suggested initiatives.

Broadening the impact beyond cricket players and/or management team, healthcare screening of supporters on match days can be implemented. Individuals identified as moderate/high-risk persons can be invited to health information sessions. As trust is built between healthcare professionals and club/team managers, health information sessions can be integrated for cricket players and supporters to enhance attendance by these moderate/high-risk individuals. Such initiatives are supported by the findings of Leone et al. (2021), who emphasised the importance of primary preventative healthcare for men and instilling a sense of responsibility and value in their health, as poor health outcomes can be limited through early screening and treatment.[61]

Besides providing education through health information sessions hosted by healthcare professionals, cricketers can also contribute to educate their supporters. Short videos featuring the cricketers can be made addressing the aspects of healthy lifestyle habits and PA and shared on the cricket club's social media platforms and/or website.

Establishing effective healthcare referral systems within the community

An important component of the club-based health information sessions would be educating attendees on NCDs and related premature mortality rates as well as the importance of timely healthcare referral and interventions to limit the negative health impact of NCDs. According to needs, channels to access the healthcare system through referral should be made explicit and facilitated by healthcare professionals.

Advancing recreational sport opportunities for men in communities (e.g., cricket)

Utilising partnered cricket clubs, local businesses and/or government departments (as involved in our study) can be approached to participate in clubs' community-based recreational sport events. These events can involve community schools, children/youth centres, and other community establishments, providing the opportunity for social interaction and emphasising the emotional and physical benefits of recreational sport. At these sport events, attendees can be informed of health screenings taking place on club match days as well as health information sessions and information available on different club communication platforms. This would provide an additional entry

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point to access established information sessions and healthcare referral options.

The strategies suggested provide different entry points to engage as many men as possible within these settings, but it is acknowledged that not all men in a community will be reached through these suggested strategies.

Study Limitations and Recommendations

Limitations of our study include that study participants were of a single age group and community, with similar environmental and social factors, which could have impacted the results. Although some results were comparable with other studies, the authors recommend the study to be repeated in multiple South African communities and a variety of age groups to establish a broader view of PA levels and lifestyle habits of South African men.

Another limitation is the exclusive use of self-reported data collection tools, which could lead to reporting errors, as data provided by participants is based on the accuracy of their recollection. The addition of 24-hours recall diaries implemented over a period of 1 week for PA and lifestyle habits could address some of the concerns related to self-reporting.

CONCLUSION

This study provided an insight into the role of recreational sport to achieve the recommended PA levels, which could assist in reaching optimal health outcomes for individuals at risk of premature mortality because of NCDs. Further, the study provides a glimpse into the relationship between PA levels and healthy lifestyle habits in a recreational sport participating and non-sport participating population of a developing country. Building on the baseline information collected in this study, the potential role of community-based strategies to achieve health benefits and address the prevalence of NCDs and premature mortality in developing communities, is highlighted.

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