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Participation Levels Of Amputees In Physical Activities And Sports In Yemen

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Abstract: This study aimed to assess amputees' participation level in physical activities and sports competitions in Yemen and to evaluate the key factors influencing their engagement, including accessibility, infrastructure, and institutional support. The researcher employed a descriptive methodology, collecting data through a questionnaire distributed to 104 amputees. The findings highlight significant limitations in sports facilities, specialized equipment, systematic planning, coaching expertise, and financial support, all of which contribute to low participation in physical activities and sports competitions. Moreover, the absence of an organized sports framework and dedicated policies further exacerbates these challenges. Based on the results, this study proposes a strategic plan to enhance amputees' participation in sports by improving infrastructure, implementing specialized training programs, increasing financial resources, and reforming policies at the Ministry of Youth and its provincial offices. The study emphasizes the importance of collaboration between governmental institutions, sports organizations, and community initiatives to foster an inclusive and sustainable sports environment for amputees and individuals with disabilities. It anticipates that implementing these recommendations will lead to higher participation rates, improved athletic performance, and enhanced overall well-being for amputees in Yemen.

Keywords: Amputees; physical activity; rehabilitation; adaptive sport; prosthetics; Yemen; participation

Introduction

Physical activity and sports are vital in enhancing public health outcomes and individuals' psychological well-being while improving overall quality of life. Moreover, these activities contribute significantly to social and behavioral development, facilitating individual integration into society and fostering meaningful engagement across various life domains. Through participation in sports and physical activities, individuals develop essential social competencies that enable effective interaction within their communities and broader social contexts.

Given their significant societal impact, developed nations have prioritized physical and sports activities as strategic initiatives. This prioritization stems from the multifaceted benefits these activities confer across social, health, and economic domains. Implementing robust sports programs and physical activity

initiatives has demonstrated measurable positive outcomes for individual citizens and national development indicators.

The prevalence of diseases in developing countries, including Yemen, particularly diabetes and atherosclerosis, has contributed to an increasing number of limb amputations. Additionally, ongoing conflicts, wars, and the widespread use of landmines as weapons in internal conflicts have further exacerbated the situation. According to reports from health authorities, the Yemeni Ministry of Health stated that during the years 2020–2021, more than 23,280 individuals benefited from prosthetic limb projects across Yemen, which the King Salman Center for Relief and Humanitarian Action fully funded. Furthermore, 4,322 artificial limbs and modern assistive devices were installed in prosthetic centers nationwide. **(moh-ye.org, 2022)**

The significance of physical and athletic activities is particularly heightened for individuals with amputations, who often experience deteriorating health and psychological well-being, especially when lacking adequate healthcare, psychological support, and social services. These individuals require carefully designed and systematically implemented programs that address their comprehensive needs across health, psychological, and social domains. Such structured interventions are essential for facilitating their rehabilitation and promoting optimal functional outcomes.

The amputee population is significant in society and requires comprehensive care and support through well-structured measures implemented by relevant authorities. This process should begin with the provision of prosthetic devices and medical rehabilitation, followed by the development of physical and sports programs and psychological rehabilitation. These efforts facilitate their reintegration into society and enable them to resume their daily lives.

Physical and athletic activities offer multifaceted benefits for individuals with amputations, encompassing improvements in cardiovascular health, respiratory function, and overall physical performance. These activities contribute significantly to psychological well-being and facilitate social integration, providing a comprehensive approach to rehabilitation and quality of life enhancement. **(Bragaru et al. 2011)**. Physical activity and athletic participation offer numerous benefits for individuals with lower limb amputations. Regular exercise improves cardiovascular fitness, muscular strength, and overall functionality **(S. et al. 2021)**

The amputation of one or both limbs has profound adverse effects on psychological and physical health, social well-being, and mobility. These challenges arise not only from the amputation itself but also from the underlying causes, particularly in individuals who have undergone amputation due to pre-existing medical conditions. Participation in sports and physical activities has been shown to positively affect overall well-being in healthy individuals, and similar benefits extend to amputees. Notably, studies indicate that engaging in such activities has a particularly significant impact on psychological health, especially among individuals with lower limb amputations.**(Bragaru et al. 2011).**

The social aspects of physical activity appear to be particularly important, with strong correlations observed between social elements of activity participation and quality of life measures(Deans, McFadyen, and Rowe 2008). Studies suggest that amputees who engage in sports and physical activities exhibit a higher quality of life, self-esteem, and self-confidence compared to those who do not participate in such activities. **(Lowther, Lane, and Lane 2002)**, **(Du Plessis and Berteanu 2020)**

Research indicates a significant positive correlation between physical activity participation and enhanced body image perception among individuals with lower-limb amputations. Regular physical activity engagement contributes to maintaining optimal body composition and natural physique, substantially influencing these individuals' self-perception and overall body image satisfaction. **(Wetterhahn, Hanson, and Levy 2002)**

S. A. Deans et al. (2008) emphasize the importance of raising awareness among healthcare providers regarding strengthening social relationships between amputees and their friends and family. Additionally, they highlight the need to educate amputees about the benefits of increased physical activity within a socially supportive environment to enhance their overall well-being.

Increased physical activity is commonly recommended for individuals with physical disabilities. However, it is essential to distinguish between distinct categories of physical engagement: competitive sports, fitness regimens, therapeutic exercise programs, and recreational activities. Each modality offers unique benefits that warrant systematic evaluation and consideration for implementation **(Shephard 1991).** Despite these advantages, people with disabilities are often less physically active due to various barriers, including medical, psychological, social, and environmental factors **(Martin 2013).**

S. A. Deans et al. (2008) explored the relationship between physical activity and perceived quality of life among individuals with lower-limb amputations. Using a cross-sectional, mixed-methods design, the study assessed activity restriction and quality of life using the Trinity Amputation and Prosthetic Experience Scales (TAPES) and the World Health Organization Quality of Life Scale (WHOQOL-Brief). The results revealed significant correlations between social aspects of physical activity and quality of life, emphasizing the role of social relationships in enhancing well-being. These findings underscore the need for interventions promoting physical activity and social engagement in amputee care.

Du Plessis & Berteanu (2020). The study highlighted the importance of sports for prosthetic users and their positive impact on physical health, self-esteem, stress reduction, concentration, and problem-solving skills. It emphasized the beneficial effects of sports on these aspects and underscored the significance of perseverance, ambition, and confidence in adopting an active lifestyle for individuals with limb amputations.

International competitions and tournaments are organized for individuals with disabilities and amputees who use prosthetic limbs, known as the Paralympic Games. These events occur every four years, running parallel to the Olympic Games, with the primary objective of encouraging individuals with disabilities, including amputees, to engage in physical and sports activities. Numerous studies have been conducted to explore how insights from elite athletes in these competitions can be used to motivate non-elite prosthetic limb users to participate in sports and physical activities. Since elite athletes represent only a tiny percentage of this population, these studies aim to inspire and encourage sedentary individuals by presenting active amputees as role models. **(Deans et al. 2012).**

The situation of amputees in the Republic of Yemen reflects a significant and concerning reality. Despite the rising number of amputees resulting from ongoing conflict and internal wars, this population continues to face substantial neglect. Preliminary data indicate a lack of organized physical activities or sports competitions tailored to their needs over the past seven years. This absence of engagement has profound implications, as it

is likely to contribute to the deterioration of their physical and psychological well-being. Furthermore, the limited opportunities for participation in such activities weaken their social integration and connection to society. Underscoring the urgent need for targeted interventions to address the challenges faced by this vulnerable group.

This study seeks to explore the availability of physical activities and sports competitions specifically designed for amputees and assess the level of participation of individuals with limb loss and prosthetic users in such activities and competitions in Yemen. The primary objective is to draw the attention of stakeholders and relevant authorities to the importance of sports and physical exercise in this population's rehabilitation and social integration. By highlighting the critical role of physical activity, this research aims to advocate for the development of targeted programs that support amputees' physical, psychological, and social well-being, ultimately fostering their inclusion in society.

The study aimed to measure the availability of physical activities and sports competitions organized by the relevant authorities for amputees, and to determine the level of participation of amputees with artificial limbs in physical activities and sports competitions.

Materials and Methods:

This study employed the descriptive approach to measure "Participation Levels of Amputees in Physical Activities and Sports in Yemen, " providing a structured data collection and analysis framework. This methodology is particularly suitable for this study as it allows for documenting the actual reality and offers insights to inform future interventions, policies, or theoretical developments. The goal is to present a clear and objective depiction of amputees' participation in sports activities, contributing to a deeper understanding of the current situation and associated challenges.

Study sample:

The study sample was deliberately selected from amputees who had previously engaged in physical and sports activities and participated in athletic competitions. The total number of participants chosen was 111; however, only 104 provided complete and valid responses. Seven participants were excluded due to incomplete questionnaire responses. Therefore, the final study sample consisted of 104 participants.

Data Collection:

The data were collected using a questionnaire developed by the researcher and validated by a panel of six expert reviewers. The questionnaire was then distributed to the study sample. It consisted of 19 items divided into three main dimensions:

- Dimension One: Availability of Physical Activities for Amputees (7 items). This dimension assessed the extent to which specialized physical activities are available and accessible for individuals with limb amputations.

- Dimension Two: Availability of Sports Competitions for Amputees (5 items). This dimension evaluated the presence and frequency of sports competitions designed for and including amputee athletes.
- Dimension Three: Level of Amputee Participation in Physical Activities and Sports Competitions (7 items). This dimension measured the degree of engagement and participation of individuals with limb amputations in available physical activities and sports competitions.

The questionnaire was designed to comprehensively assess both the availability of adaptive sports opportunities and the actual participation levels of amputees in these activities. Each dimension was carefully constructed to gather specific data relevant to the research objectives.

Participant profile:

1) Age

Figure 1.1 illustrates that most of the sample falls within the age range of 20–30 years, comprising 60.6% of the study population. This age distribution is particularly noteworthy due to its potential impact on physical activity and rehabilitation outcomes. The age group of 20–30 represents a peak period for engaging in physical activities, competitive sports, and advancing to higher performance levels, followed by the 30–40 age group. Additionally, it is essential to highlight that the primary cause of amputation among most participants was not due to medical conditions but rather direct injuries and landmines resulting from the ongoing conflict in Yemen.

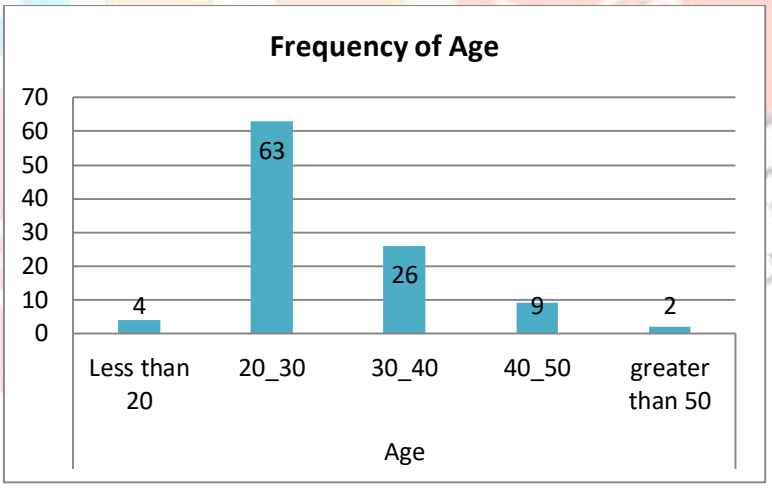

Figure 1: Participants' Age

2) Date of amputation:

As shown in Table 1, there is a notable increasing trend in the frequency of amputations from 2015 to 2023. It shows a particular concentration of cases in recent years, with 2021 representing the highest proportion (17.3%, n=18). The 2020-2023 and 2017 periods account for approximately 66.8% of all cases, indicating a significant recent clustering. This further supports our previous assertion that the majority of amputations result from war-related injuries, as this period coincides with the peak of the conflict in Yemen.

Table 1: Frequency of Participants by date of amputation.

Years	Frequency	Percent
1999	1	1.0
2012	1	1.0
2014	1	1.0
2015	2	1.9
2016	7	6.7
2017	12	11.5
2018	9	8.7
2019	8	7.7
2020	14	13.5
2021	18	17.3
2022	13	12.5
2023	12	11.5
2024	6	5.8
Total	**104**	**100.0**

3) Type of amputation

Table 2 reveals that most of the study sample consists of individuals with lower limb amputations, representing 84.6% of the sample, with a frequency of 88 participants. They are followed by individuals with upper limb amputations, accounting for 14.4% of the sample, with a frequency of 15 participants. Additionally, the sample includes one participant with both upper and lower limb amputations.

Table 2: Frequency of Participants by type of amputation.

Categories	Frequency	Percent
upper limb	15	14.4
lower limb	88	84.6
upper and lower limbs	1	1.0
Total	104	100.0

4) Amputated limbs:

Figure 1.2 illustrates that most individuals with lower limb amputations have a single leg amputation, totaling 80 participants from the study sample. They are followed by individuals with a single hand amputation, totaling 11 participants. Additionally, 10 participants have bilateral leg amputations, one has bilateral hand amputations, and another has both a single leg and a single hand amputation.

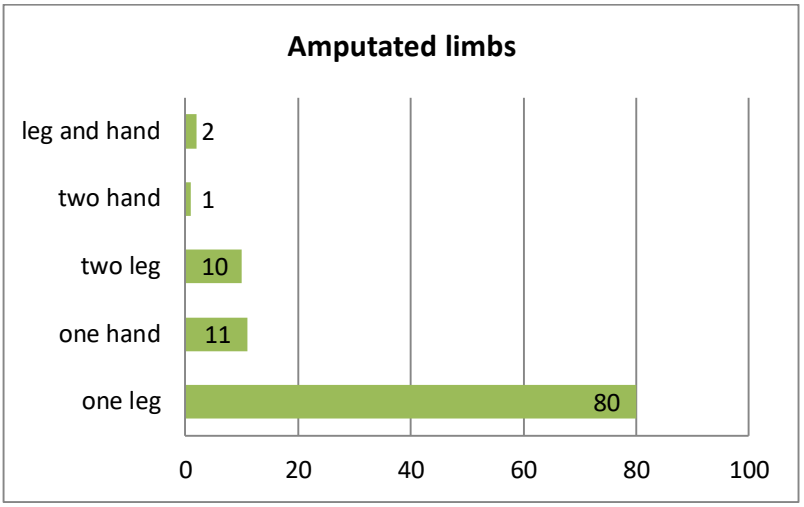

Figure 2: Frequency of Participants by amputated limbs

5) Level of amputation:

Table 3 indicates that 56.5% of the lower limb amputees in the study sample have a below-knee amputation, while 42.4% have an above-knee amputation. Additionally, one individual has a bilateral amputation (both above and below the knee), representing 92% of the total sample participating in this study. Regarding upper limb amputation, 57.1% have a below-elbow amputation, 35% have an above-elbow amputation, and one individual has a bilateral amputation among those with upper limb amputations.

Table 2: Frequency of Participants by Level of Amputation.

Type of limb	Level	Frequency	Percent
Upper limb amputation level	Below elbow	8	57.1
	Above elbow	5	35.7
	Under and Below	1	7.1
Total		**14**	**100.0**
Lower limb amputation level	Below knee	52	56.5
	Above knee	39	42.4
	Under and Above	1	1.1
Total		**92**	**100.0**

Sports or physical activities practiced by participants:

Table 4 presents the distribution of the study sample across various physical activities and their participation in these activities before and after amputation. Before amputation, 48 individuals in the study sample engaged in football, while the rest participated in other activities, including fitness training, walking/running, basketball/volleyball, swimming, and taekwondo. The most noteworthy aspect is the shift in physical activity patterns before and after amputation.

Table 3: Distribution of participants by sports or physical activities

Sports / physical activities	Before amputation	After amputation
football	48	9
Fitness	14	8
Walking/Running	23	32
Basketball/Volleyball	13	9
Swimming	13	15
Taekwondo	1	0

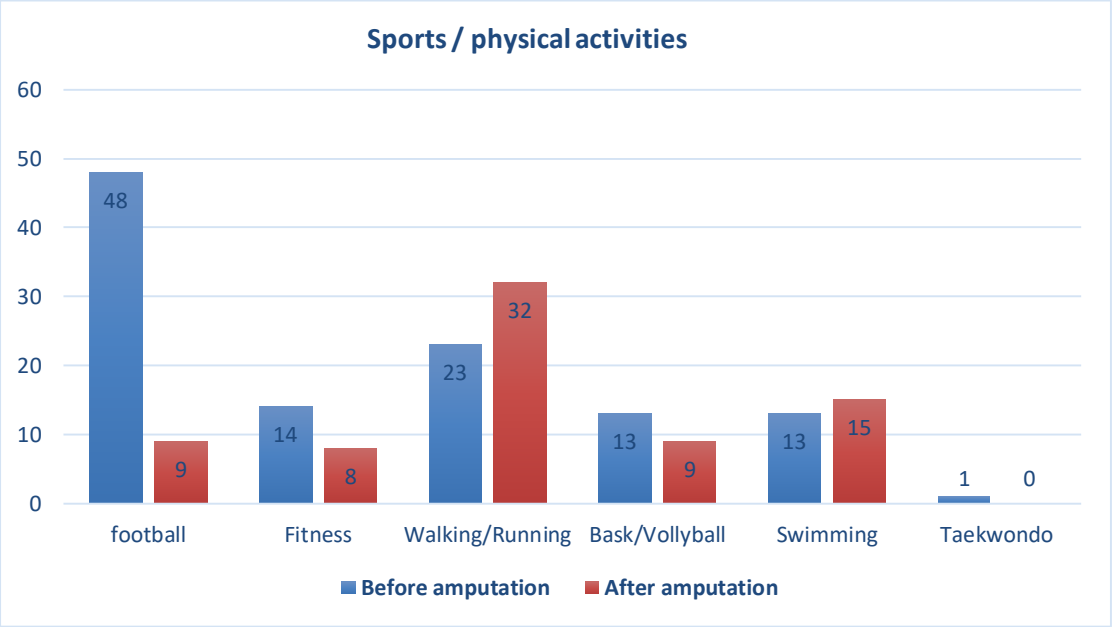

Figure 3: Distribution of participants by sports or physical activities

In Figure 3, A significant increase in walking/running practice was observed after amputation (rising from 23 to 32 participants), whereas football showed the most dramatic decline (from 48 to 9 participants). This decline is attributed to athletes transitioning to walking as a means of maintaining physical fitness and its role in rehabilitation. Additionally, the high physical friction required in sports such as football makes them more challenging for individuals using prosthetic limbs.

Participation in swimming remained relatively stable (increasing from 13 to 15 participants), with this slight rise likely due to some amputees shifting from other sports to swimming as a recreational activity. These shifts in activity suggest adaptive behaviors and may reflect the accessibility and adaptability of different sports for individuals with limb amputations.

Validity and Reliability:

To ensure the face validity (content validity) of the initial version of the questionnaire, the researcher presented it to a panel of expert reviewers specializing in sports, statistics, accounting, and adapted sports for individuals with disabilities. The experts were asked to evaluate the clarity and wording of each item, assess its appropriateness for measuring the intended construct, and determine its suitability for the corresponding dimension.

Additionally, the researcher requested recommendations for improving the questionnaire, including modifications to enhance clarity or adding new items to increase comprehensiveness. Based on expert

feedback, the researcher implemented revisions agreed upon by 90% of the reviewers, which involved adding and removing certain items and rewording some statements for better clarity.

The Reliability:

Table 5 shows that the Cronbach's alpha coefficient for the study factors ranges between 0.769, 0.858. Moreover, the Cronbach's alpha coefficient of the study as a whole reached 0.807. This indicates that the questionnaire has acceptable reliability and can be applied in this research context.

Table 4: Cronbach's Alpha

Factors	N of Items	Cronbach's Alpha
Dimension One	7	0.858
Dimension Two	5	0.799
Dimension Three	7	0.679
Overall	19	0.807

The validity:

To validate the questionnaire, the researcher applied internal consistency validity. To compute the internal consistency, the researcher used the Pearson correlation coefficient. Tables (6,7,8) show the correlation coefficient of each item with the factor it belongs to.

Internal Consistency:
Dimension One:

Table 5: Pearson correlation coefficient of each item within the first factor.

M	Statements	Factor
1	Weekly program for physical activity	.814**
2	Monthly program for physical activity.	.802**
3	Annual program for physical activity	.777**
4	Dedicated fields and halls for amputees	.758**
5	Provision of necessary sports equipment	.741**
6	Specialised trainers available	.664**
7	Authorities raise awareness through the media	.602**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Dimension Two:

Table 6: Pearson correlation coefficient of each item within the second factor

M	Statements	Factor
1	Semi-annual competition plan	.703**
2	Annual competition calendar	.777**
3	Plans include team games	.794**
4	Plans include individual events	.733**
5	Competitions organised at the governorate level	.643**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Dimension Three:

Table 7: Pearson correlation coefficient of each item within the third factor

M	Statements	Factor
1	I walk ≥30 minutes daily	.331**
2	I continue the sport I practiced pre-amputation	.549**
3	I have a pool membership and swim	.664**
4	I do home exercises almost daily	.566**
5	I join activities by specialised authorities	.742**
6	I take part in team competitions	.649**
7	I take part in individual competitions	.587**

Tables 6,7,8 show that the Pearson Correlation coefficient between each item and the factor it belongs to at the level of significance 0.01. From Table 6 through Table 8, the Pearson Correlation coefficient ranges from 0.331 to 0.814, which indicates a high internal consistency validity of the questionnaire.

Results and Discussion:

First Question

1. Are there physical and sports activities specifically for amputees and prosthetic users in Yemen that relevant authorities have organized?

The following table consists of the responses of the participants related to the first question:

Table 8: Frequency Analysis and Descriptive Statistics of "physical and sports activities specifically for amputees and prosthetic users in Yemen"

Statements		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD	Ranks
Weekly program for physical activity	Freq.	48	44	7	5	0	1.70	0.799	2.5
	%	46.2	42.3	6.7	4.8	0.0			
Monthly program for physical activity.	Freq.	50	44	6	4	0	1.65	0.760	4
	%	48.1	42.3	5.8	3.8	0.0			
Annual program for physical activity	Freq.	48	44	7	5	0	1.70	0.799	2.5
	%	46.2	42.3	6.7	4.8	0.0			
Dedicated fields and halls for amputees	Freq.	52	46	5	1	0	1.57	0.635	6.5
	%	50.0	44.2	4.8	1.0	0.0			
Provision of necessary sports equipment	Freq.	53	44	6	1	0	1.57	0.650	6.5
	%	51.0	42.3	5.8	1.0	0.0			
Specialised trainers available	Freq.	50	46	6	2	0	1.62	0.687	5
	%	48.1	44.2	5.8	1.9	0.0			
Authorities raise awareness through the media	Freq.	22	40	21	19	2	2.41	1.076	1
	%	21.2	38.5	20.2	18.3	1.9			
Overall Mean							1.7459		
Std. Deviation							0.5766		

Table 9 presents the descriptive statistics and response distribution regarding the availability of physical and sports activity programs specifically designed for amputees and prosthetic users. The overall mean score was 1.75 (SD = 0.58), indicating low agreement across all statements.

The item "We are made aware of the importance of sports by relevant authorities through media outlets" recorded the highest (mean 2.41, SD = 1.08), although responses remained generally negative, with 59.7% expressing disagreement or strong disagreement. All other statements showed similar trends, with disagreement levels exceeding 80% for most items. These findings reflect a consistently low presence of structured physical activity programs, specialized facilities, trained personnel, or equipment provision for amputees in Yemen.

Second Question:

2. Are there sports competitions specifically for amputees and prosthetic users in Yemen? The following table consists of the responses of the participants related to the second question:

Table 9: Frequency Analysis and Descriptive Statistics of "sports competitions specifically for amputees and prosthetic users in Yemen"

Statements		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	SD	Ranks
Semi-annual competition plan	Freq.	44	54	4	2	0	1.65	0.650	4
	%	42.3	51.9	3.8	1.9	0.0			
Annual competition calendar	Freq.	42	53	5	4	0	1.72	0.730	3
	%	40.4	51.0	4.8	3.8	0.0			
Plans include team games	Freq.	38	52	12	2	0	1.79	0.720	2
	%	36.5	50.0	11.5	1.9	0.0			
Plans include individual events	Freq.	32	49	15	6	2	2.01	0.930	1
	%	30.8	47.1	14.4	5.8	1.9			
Competitions organised at the governorate level	Freq.	62	32	5	5	0	1.55	0.799	5
	%	59.6	30.8	4.8	4.8	0.0			
Overall Mean							1.7442		
Std. Deviation							0.57417		

Table 10 reports responses regarding the availability of organized sports competitions for amputees in Yemen. The overall mean score was 1.74 (SD = 0.57), again indicating strong disagreement across the scale.

The highest-ranked item was "Individual sports competitions plans" (Mean = 2.01, SD = 0.93), followed by "Team games competitions plans" (Mean = 1.79, SD = 0.72). Despite these relatively higher scores, both items remained within the "disagree" range. Items related to annual calendars, semi-annual plans,

and governorate-level competition organization scored even lower, with disagreement rates exceeding 90% in some cases.

Overall, the results show a marked deficiency in structured competition programs for amputees at both local and national levels.

Third Question:

3. What is the amputees' participation level in physical activities and sports competitions? The following table consists of the responses of the participants related to the third question:

Table: (10) Frequency Analysis and Descriptive Statistics of "level of participation of amputees in physical activities and sports competitions"

Statements		Never	rarely	sometimes	often	always	Mean	SD	Ranks
I walk ≥30 minutes daily	Freq.	6	17	17	30	34	3.66	1.251	1
	%	5.8	16.3	16.3	28.8	32.7			
I continue the sport I practiced pre-amputation	Freq.	66	13	11	12	2	1.76	1.153	4
	%	63.5	12.5	10.6	11.5	1.9			
I have a pool membership and swim	Freq.	32	29	31	5	7	2.29	1.155	3
	%	30.8	27.9	29.8	4.8	6.7			
I do home exercises almost daily	Freq.	9	21	37	28	9	3.07	1.082	2
	%	8.7	20.2	35.6	26.9	8.7			
I join activities by specialised authorities	Freq.	60	30	8	3	3	1.64	0.954	6
	%	57.7	28.8	7.7	2.9	2.9			
I take part in team competitions	Freq.	75	18	8	1	2	1.43	0.833	7
	%	72.1	17.3	7.7	1.0	1.9			
I take part in individual competitions	Freq.	52	35	12	5	0	1.71	0.855	5
	%	50.0	33.7	11.5	4.8	0.0			
Overall Mean							2.2239		
Std. Deviation							0.61478		

Table 11 outlines amputees' participation levels in various physical activities and sports competitions. The overall mean score was 2.22 (SD = 0.61), suggesting low-to-moderate levels of participation.

The highest participation was reported for daily walking (Mean = 3.66, SD = 1.25), with 61.5% reporting frequent engagement. Home-based exercises ranked second (Mean = 3.07, SD = 1.08). Participation in swimming was limited (Mean = 2.29, SD = 1.15), with over half reporting "never" or "rarely."

Participation in organized sports activities or competitions was very low. Practicing pre-amputation sports, taking part in individual competitions, and engaging in team sports all scored below 1.80, with over 75% of respondents reporting no participation.

Discussion:

The findings of this study highlight a significant lack of structured physical activity programs and organized sports competitions for amputees in Yemen. Respondents consistently indicated that governmental and sports authorities do not provide adequate programs, facilities, or awareness initiatives targeting this population. This aligns with broader regional challenges, particularly in low-resource and conflict-affected settings.

The shortage of sports programs can be attributed to several overlapping factors. The prolonged armed conflict in Yemen has deeply affected all sectors, including infrastructure, sports institutions, and funding mechanisms. As resources are redirected toward humanitarian priorities, recreational and rehabilitation activities receive limited attention. Similar trends have been reported in conflict-affected regions globally, where vulnerable groups, including persons with disabilities, experience reduced access to structured physical activities. this aligns with the evidence that persons with disabilities are facing substantial challenges to physical activity participation **(Rohwerder, 2017)**. Studies indicate they are 16-62% less likely to meet physical activity guidelines compared to non-disabled populations **(Ginis et al. 2021).**

The study also found extremely limited availability of sports competitions, whether at the individual, team, or governorate level. The absence of an amputee-specific sports federation or coordinating body likely exacerbates this gap, resulting in uncoordinated or sporadic initiatives with no formal structure. The findings are consistent with reports emphasizing the need for specialized governing bodies to ensure sustainable sports programming for individuals with disabilities.

Participation results further revealed that amputees rely primarily on self-directed activities, mainly walking and home exercises, which require minimal equipment or external support. This trend is consistent with the findings of **Langford et al. (2019)**, who noted that amputees frequently engage in home-based or moderate-intensity activities due to accessibility and low cost. However, participation in organized team or individual sports remains extremely low. This reflects not only the lack of available programs but also psychological, social, and environmental barriers, such as stigma, lack of encouragement, inaccessible facilities, and limited transportation options, corroborating earlier findings by **(Bragaru et al. 2011).**

The near absence of structured sports events and rehabilitation-focused activities suggests an urgent need for coordinated efforts among sports authorities, rehabilitation centers, humanitarian organizations, and policymakers. Such efforts should focus on integrating amputees into community-based physical activity programs, establishing specialized training programs, investing in adaptive sports equipment, and developing national-level strategies to promote inclusive sports participation.

Conclusions:

The findings demonstrate several critical conclusions regarding amputees' participation in physical activity and sports in Yemen. First, the absence of structured programming, reflected in the lack of annual plans for physical activities (reported by 88.5% of participants) and the absence of an annual sports competition calendar (91.4%), has severely restricted opportunities for organized participation. This gap is further reinforced by limited institutional commitment, the absence of specialized sports federations, and low

awareness among policymakers and the public about the value of sports for amputees. Additionally, inadequate infrastructure, a shortage of financial and logistical resources, and the lack of accessible facilities further constrain participation and impede the development of inclusive sports initiatives. The ongoing armed conflict and political instability have compounded these challenges by diverting resources toward humanitarian priorities and disrupting coordinated national efforts. Consequently, amputees predominantly engage in independent activities such as walking (61.5%) and home-based exercises (35.6%), while participation in organized sports remains minimal (86.5% reporting never or rarely participating), largely because such independent activities require no financial cost, minimal physical demand, and do not rely on institutional support or formal sports structures.

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Nil.

Conflicts of interest:

There are no conflicts of interest.

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