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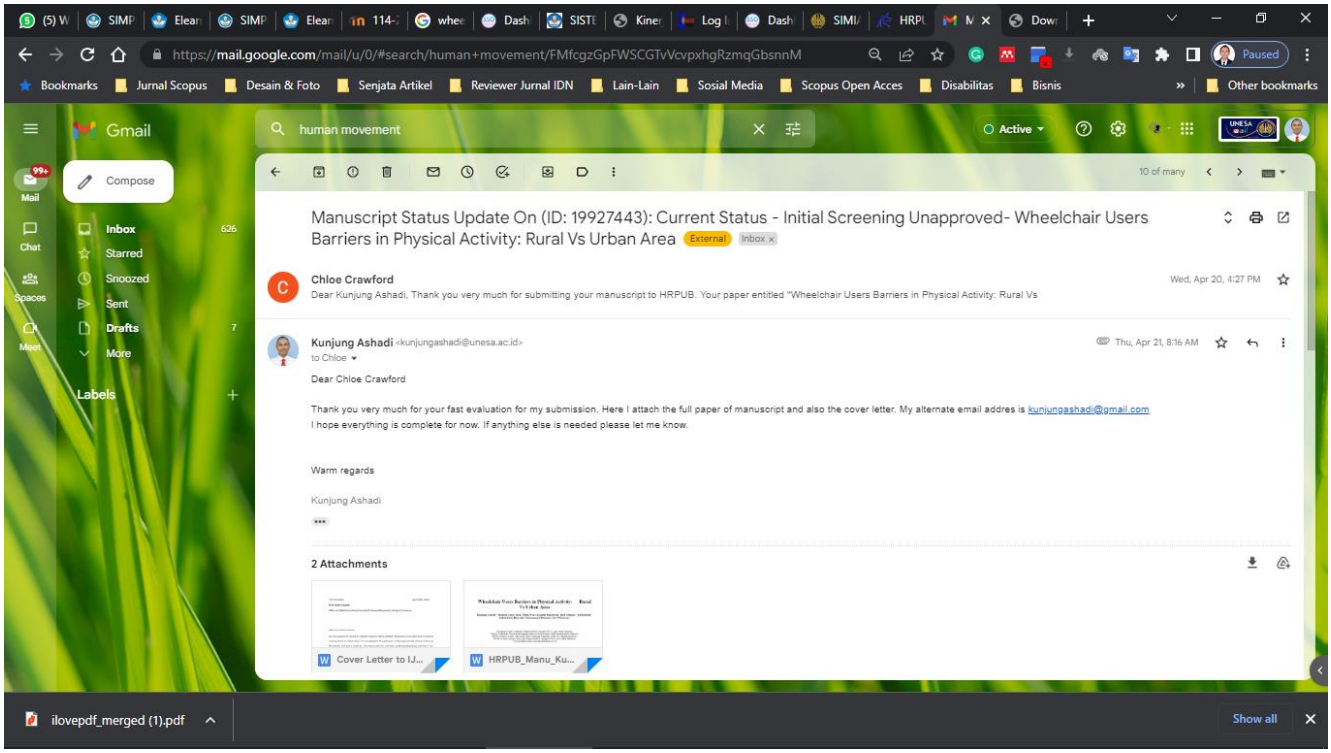
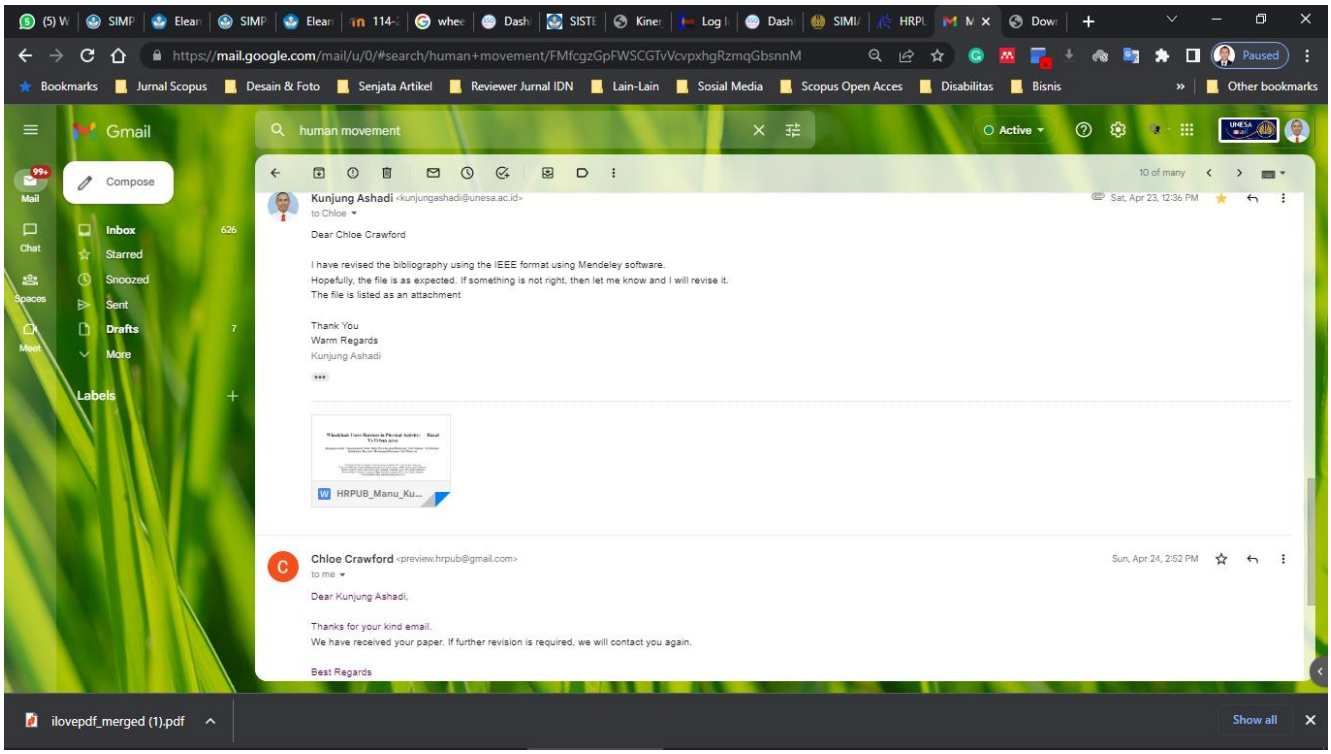
1. Bukti Pengiriman Artikel Melalui Email dan Sistem OJS IJHMS





The honorable April 18th, 2022

Prof. Ratko Pavlovic

Editor-in-Chief International Journal of Human Movement and Sports Sciences

Dear Prof. Ratko Pavlovic

We are pleased to submit an original research article entitled “Wheelchair Users Barriers in Physical Activity: Rural Vs Urban Area” for consideration of publication in the International Journal of Human Movement and Sports Sciences. This manuscript has not been published elsewhere and that it has not been submitted simultaneously for publication elsewhere.

In this paper, we report that people in Indonesia who use wheelchairs in rural areas have greater barriers to physical activity than people in urban areas. The dominant barriers are friends and family as a support system ($p<0.05$), lack of public facilities ($p<0.05$), lack of fitness facilities and infrastructure ($p<0,05$), staff/program/policy ($p<0.05$), and community ($p<0.05$). The comprehensives structural analysis was obtained by combines unpair t-test for compare physical activity barriers in the rural and urban area.

Because there has been no discussion about barriers to physical activity in wheelchair users by specifically comparing rural and urban areas from previous studies, we believe this paper should be of interest to readers of International Journal of Human Movement and Sports Sciences. All authors have read and approved the manuscript being submitted, and agree to its submission to this journal.

Thank you for your consideration.

Sincerely,

Kunjung Ashadi

Wheelchair Users Barriers in Physical Activity: Rural Vs Urban Area

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Abstract Individuals with disabilities are less active and at greater risk for chronic diseases compared to the general population. Previous studies have identified physical activity levels and physical fitness levels without measuring barriers to physical activity. This study examines how wheelchair users in urban and rural areas assess barriers to physical activity. This study looks for the dominant factors that hinder the physical activity of wheelchair users in urban and rural areas. The method used a cross-sectional study using an online-based survey to obtain information about physical activity barriers among disabled people with wheelchair users. Therefore, the entire 41 research subject from urban areas, and 40 research subjects were from rural areas. The research subject was used for the analysis and assessed using Barriers Physical Activity Questionnaire Mobility Impairment (BPAQ-MI). The analysis data technique is an independent sample's T-test to know the difference of the physical activity barriers between wheelchair users in urban and rural areas. The results of this study are wheelchair users who live in rural areas have more barriers than wheelchair users in urban areas. The dominant barriers are friends and family as a support system ($p<0.05$), lack of public facilities ($p<0.05$), lack of fitness facilities and infrastructure ($p<0,05$), staff/program/policy ($p<0.05$), and community ($p<0.05$). The conclusion is that people who use wheelchairs in rural areas have greater barriers to physical activity than people in urban areas.

Keywords BPAQ-MI, Barriers, physical activity, rural, urban, wheelchair

1. Introduction

Sports provide children and adolescents with opportunities to belong, achieve fitness goals, and compete. Participation in sport can also influence life-long physical fitness and health habits in the era of increasing obesity and sedentary behavior in adolescence, plays a significant role in facilitating long-term cardiovascular health [1]. Physical activity participation is important for optimal health outcomes for everyone, including young people and adults with lifelong physical disabilities [2]. The previous study shown that participation rates for individuals with disabilities are low for all age groups, particularly in adolescence [3].

Due to their sedentary lifestyles, Andriana & Ashadi [4] individuals with lower limb disabilities have low levels of physical fitness, with an increased risk of acquiring other comorbidities such as type II diabetes, hypertension, cholesterol and metabolic syndrome. On the other hand, [5] adopting a healthy active lifestyle and regular physical activity participation positively affect their physical fitness. One of the reasons found in the literature that can justify the fact that these individuals adopt sedentary lifestyles is the existence of barriers/obstacles/constraints that make the practice of physical activity difficult ability (aerobic capacity, strength, balance and flexibility), cognition, health and quality of life [6]. The previous study show that some issues generalize to all audiences (e.g., limited time, or financial cost) however, others are more specific to wheelchair users, such as the fear of stereotyping [7]. Focusing on young users, revealed barriers which included attitude, motivation, existing injury or fear of developing injuries, limited facilities, and a lack of

information or knowledge [8].

Regular physical activity is known to be important for general health and wellbeing. However, it has been shown that many of the estimated 65 million manual wheelchair users in the world do not achieve recommended levels of activity, and miss out on the associated health benefits, such as reduced physical pain and a lower risk of depression [9]. There are profound physical and psychological health risks associated with physical inactivity and abundant health benefits associated with an active lifestyle [10]. The health benefits of physical activity are many, including a lower risk of all-cause mortality, lower incidence of cardiovascular disease, hypertension, type 2 diabetes, and a number of cancers. This evidence base has led to physical activity being considered a key factor for optimal health [11]. Yet the number of people doing enough physical activity to reap these health benefits are too few, the majority of the population is moving less and sitting more [12].

People living with disabilities have poorer health than the general population. The previous study said that people living with disabilities are at a greater risk of injury and of developing non-communicable chronic diseases and age-related health conditions at earlier ages [13]. Physical activity is beneficial for most people living with disabilities and, importantly, no evidence suggested that physical activity is harmful to this population. Physical activity was positively associated with cardiorespiratory fitness, muscular strength, functional skills, psychosocial wellbeing, and indicators of cardiometabolic health in people with physical or cognitive disabilities [14]. Similarly, systematic reviews underpinning the new US and WHO physical activity guidelines reported that physical activity was associated with improved physical function, cognition, and quality of life among people with disabilities [14].

It is well documented for the general population that a physically active lifestyle is beneficial for a person's health. An active lifestyle is even more important for wheelchair users [15]. The previous study shown that wheelchair users with spinal cord injury or lower limb amputation, physical inactivity, being overweight, lower life satisfaction and low vitality are frequently reported problems [3]. A cycle of deconditioning can arise, in which an inactive lifestyle leads to an increase in body weight, resulting in secondary problems as fatigue, distress, low vitality and sleeping disorders, which in turn lead to an even more inactive lifestyle [3]. A physically active lifestyle can break this cycle and could improve everyday functioning, reduce disability, and reduce the risk of secondary health problems in people with physical disabilities [16].

The previous study about physical activity in wheelchair users have focused on physical health benefits and individual fitness level. Study for young people and adults with childhood-onset physical disability, the barriers and facilitators to physical activity participation are not well understood. For this reason, the novelty of study to present systematic review is to contribute to a better understanding of the perceived barriers of physical activity participation in individuals disability with wheelchair user in urban areas and rural areas. It is important to identify determinants of the barriers physical activity in order to understand the problem of physical inactivity thoroughly, and to be able to develop targeted behavioural change strategies. In literature, demographics (e.g., age, gender), health-related factors, psychological factors, social factors and environmental factors are reported to be possible determinants of physical activity in wheelchair users [17].

However, physical activity experiences in childhood and adolescence with disabilities can influence long-term health behaviours [18]. The transition from adolescence to young adulthood is a crucial period for shaping long-term physical activity behaviours and addressing risk factors for chronic health conditions [19]. It is also an important time for psychosocial health, where young people with disabilities experience poorer mental health outcomes compared to their peers [20]. Adults with disabilities report high levels of depression, loneliness, and social isolation, and difficulty developing and maintaining relationships [2]. Physical activity can provide a sense of belonging, reduce social isolation, and improve quality of life with emerging evidence suggesting people with physical disabilities value the psychosocial benefits of being active, such as having fun, feeling capable, and fitting in with their peers [21].

2. Methods

The present study was a cross-sectional study using an online-based survey to obtain information about physical activity barriers among disability people with wheelchair user in urban and rural areas. The purpose of this study was to observe physical activity barriers in wheelchair users throughout Indonesia. It is not easy to get data about the barriers to physical activity in wheelchair users, therefore, to distribute the online questionnaire (BPAQ-MI) to all wheelchair users in Indonesia, collaboration with a wheelchair user organization namely United Celebral Palsy Roda Untuk Kemanusiaan (UCPRUK) is needed. UCPRUK has been committed since 2009 until now to serving people with mobility impairments, especially wheelchair users in Indonesia.

Perceived barriers for physical activity, assessed using the Barriers to Physical Activity Questionnaire for People with Mobility Impairments (BPAQ-MI). Demographic characteristics queries included age, gender, and city of residence. The BPAQ-MI consisted of 61 items distributed over four domains, with each domain divided into two subdomains. The eight subdomains, which are based on an ecological model of health promotion describing how the individual

interacts with the environment, describe health and attitudes/beliefs towards physical activity (intrapersonal); friends and family (interpersonal), fitness centre built environment and staff/program/policy (organizational), and community built environment and safety. The BPAQ-MI's general structure was to ask the respondent to indicate whether he/she experienced a barrier that hindering them from engaging in physical activity. Therefore, the entire 41 respondents from urban areas and 40 respondents from rural areas. The analysis data technique is an independent sample's t-test to know the difference of the physical activity barriers between wheelchair users in urban and rural areas.

3. Results

Table 1. The profile of research subject

The Profile of Research Subject	Percentage
Gender	
Male	57%
Female	43%
Age	
Less than 25 years old	16,5%
More than 26 years old	83,5%
How long have you been a disabled person	
Less than 25 years ago	54,4%
More than 26 years ago	44,6%

Table 2. The detail of the barriers physical activity of research subject

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Health					
You get tire or fatigued	0,235	8	11	20%	28%
You were in pain	0,922	2	3	4%	7%
You believe physical activity requires too much work/effort/energy	0,722	28	34	70%	83%
You didn't have an appropriate fitness level to be physically active (e.g., lack of aerobic ability)	0,014	11	24	27%	61%
You felt physical discomfort while being physically active	0,037	9	26	22%	66%
You were afraid of getting injured while being physically active	0,447	31	33	76%	83%
You were depressed	0,345	8	11	5%	8%
Beliefs/Attitudes towards physical activity					
You lack the motivation to be physically active	0,717	23	24	55%	60%
You don't have confidence in your ability to be physically active	0,122	23	27	55%	68%
You were embarrassed about your appearance while being physically active	0,729	5	4	11%	9%
You have not seen positive results from previous physical activity	0,340	3	5	7%	13%
You feel you are too old to be physically active	0,568	9	12	23%	30%
You didn't think physical activity would help you	0,832	3	6	8%	15%
Being physically active is not enjoyable	0,508	5	7	12%	17%
You don't see a reason to be physically fit	0,387	4	5	10%	13%
Friends					
You did not have another person with a disability who was physically active to look up to	0,000	14	30	34%	75%

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Your friends didn't assist you to be physically active	0,000	11	27	26%	68%
Your friends are not physically active	0,000	12	29	29%	72%
Your friends don't talk about being physically active	0,000	13	32	31%	80%
Your friends were not encouraging or supportive of your efforts to be physically active	0,000	9	31	22%	78%
Your friend's priorities take precedence/priority over you being physically active	0,000	5	22	13%	56%
Family					
Your family's culture, beliefs, or morals did not place physical activity as a priority	0,002	7	23	17%	57%
Your family did not assist you to be physically active	0,008	5	25	12%	62%
Your family members are not physically active	0,003	10	28	25%	70%
Your family members were not encouraging or supportive of your efforts to be physically active	0,003	7	21	17%	52%
Your family did not think physical activity would be helpful to improve your health	0,009	4	18	9%	45%
Fitness Centre Built Environment					
Lack of accessible exercise equipment at fitness centre	0,000	5	39	11%	97%
The walkways/aisles were too narrow or had obstacles	0,000	8	37	20%	92%
lack of accessible door handles	0,000	3	36	7%	90%
Lack of accessible curb cuts at fitness centre	0,000	10	38	24%	96%
ground that you walk/roll on was not accessible	0,000	11	35	28%	87%
Lack of accessible ramps at fitness centre	0,000	13	38	31%	94%
Lack of accessible bathrooms at fitness centre	0,000	12	39	29%	98%
Lack of accessible showers/locker rooms	0,000	14	39	33%	98%
Lack of accessible elevators at fitness centre	0,000	15	40	36%	100%
Lack of accessible parking at fitness centre	0,000	17	36	41%	90%
Lack of access to indoor track for walking/wheeling	0,000	16	39	40%	98%
Staff/Program /Policy					
Fitness centre membership fees were too high	0,000	5	38	13%	96%
Your health insurance plan do not cover membership fees	0,533	36	38	89%	94%
Lack of inclusive marketing	0,000	7	35	17%	87%
Lack of accessible classes/programs at fitness centre	0,000	9	37	23%	93%
Other fitness centre members were mean or rude	0,000	13	36	32%	91%
Lack of accessible walking/rolling paths at parks	0,000	10	37	24%	93%
Lack of assistance from fitness centre staff	0,000	11	39	27%	97%
Lack of accessible sport opportunities at fitness centre	0,000	13	39	31%	98%
Signs showing where things are located were not accessible	0,000	14	38	35%	96%
Lack of interpretive services (e.g. sign language)	0,000	13	39	32%	97%
Community Built Environment					
Lack of access to public restrooms	0,000	12	38	29%	95%
uneven or crooked sidewalks	0,000	13	39	32%	97%

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
The sidewalks have cracks, gaps, or are under construction	0,000	9	34	21%	86%
Lack of rest areas (e.g. benches)	0,000	12	38	30%	96%
Potholes in the street, driveways, or parking lot	0,000	14	36	34%	90%
sidewalk's cross slope is too steep/slanted	0,000	14	37	33%	92%
The crosswalks lack traffic lights	0,000	18	35	45%	87%
Lack of accessible curb cuts in community	0,000	13	36	31%	89%
Lack of accessible transportation to fitness centre	0,000	16	37	40%	93%
Sidewalks were not wide enough	0,000	9	39	23%	97%
Safety					
excessive crime or fear of crime in neighbourhood	0,147	2	1	5%	3%
the cars drive too fast	0,568	15	11	36%	28%
excessive car traffic in my community	0,000	35	19	85%	48%
the traffic lights or crosswalk signals change too quickly	0,038	36	7	87%	18%
lack of adequate street lighting at night	0,006	5	18	11%	45%
loose dogs in community	0,755	2	1	5%	3%

Regarding participants' response to a question about barriers to exercise question on table 2, The first factors is health. There are differences between wheelchair users who live in urban and rural areas in the fitness level to be physically active (e.g. lack of aerobic ability) ($p<0,05$). Additionally, they believe physical activity requires too much work/effort/energy and afraid of getting injured while being physically active. They didn't have an appropriate fitness level to be physically active because they felt physical discomfort while being physically active and get tired or fatigued easily.

Beliefs/Attitudes towards physical activity is individual factors such as motivation and self-efficacy influence engagement in physical activity. Viewed through a socio ecological lens, factors beyond the individual-interpersonal, organizational, community, and environmental also influence engagement in physical activity. These factors could include access to places to be physically active safe places free from danger, convenient places within close enough proximity to homes or workplaces, and affordable places at a free or low price point. Overcoming challenges
to physical activity among underserved populations must include addressing affordability and accessibility of opportunities to engage in physical activity. Based on the results of the study, it is stated that people with disabilities do not have obstacles in their beliefs / attitudes to carry out their physical activities ($p>0,05$).

Friends, family, and culture can be broadly defined as a shared set of meanings and ideas held by a group of people. Physical activity beliefs and behaviours are shaped not only by an individual's cultural characteristics, but also the cultural context (e.g., family, neighbourhood, institutions, society) within which they live, move, and play. Culture, by definition, encompasses the social determinants of health. As such, physical activity should not target only the individual, but should be inclusive of the cultural context that nurtures a person's health behaviour in his or her family and community. Based on the results of the study, Wheelchair users who live in rural areas have barriers in their friends, family, and culture to carry out their physical activities ($p<0.05$).

The low physical activity levels in wheelchair users also lie in unequal opportunities to be physically active. The difference of access to facilities (e.g., recreation/ fitness centres, parks) and the safety or attractiveness of one's neighbourhood play an important role in whether people use such spaces to engage in physical activity ($p<0,05$). Lack of access to equipment, and convenient facilities have been reported in the rural area ($p<0,05$). This suggests that wheelchair users in rural populations may have limited ability to control their physical activity behaviours in the face of inaccessible environments, and barriers may vary by gender ($p<0,05$). The research data have reported that external barriers of factors are the most dominant factor in preventing people in rural areas from doing physical activities ($p <0.05$). The intended external factor is about the completeness of facilities and infrastructure to support physical activity in their environment. Facilities and infrastructure in urban areas are better than those in rural areas ($p<0.05$). The barriers are poor accessibility, poor physical layout, limited space to mobilize, and crowded environments ($p<0.05$).

4. Discussion

Reduced physical fitness level is strongly associated

with increased all cause mortality in the general population. Individuals with disabilities are less active and at greater risk for chronic diseases compared to the general population. Lower extremity impairments leading to wheelchair use are a common disability and force individuals to rely on their upper-extremities for activities of daily living. Morbidity and physical deconditioning must be prevented or limited to preserve independence, social functioning and quality of life [22].

The potential barriers reflected all levels of the ecological model, including interpersonal

factors (e.g., lacking energy, don't know where to exercise, too lazy to exercise, lack of motivation, not enough time to exercise, health concerns prevent them from exercising), intrapersonal factors (e.g., worry that people might make fun of them, no one to exercise with, no one shows them how to exercise), and organization/community factors (e.g., equipment is not made from someone with their disability, fitness centres are not accessible [23].

This study's findings have several implications for practice, and for researchers seeking to further explore barriers to physical activity among this group. The health aspect of factors that can influence an individual's ability to engage in regular physical activity. Health is a barrier factor for physical activity because research subjects with disabilities feel they have a weak body to carry out physical activities which are considered difficult to do [24]. The limited number of limbs makes people with disabilities find it difficult to do exercises and have fears about the risk of injury [3]. It is known that the lower extremities are the foundation of all body movements. The lower extremities play an important role in maintaining body balance, supporting the body, and the strongest muscles are in the lower extremities [25].

Based on the results of the study, it was shown that people with disabilities in urban area do not have barriers in their beliefs / attitudes, and they have support system from family and friends to doing their physical activity. Meanwhile the people with disabilities in rural area have barriers in their support system from family and friends to doing their physical activity. Family as the closest environment becomes an important part that can provide social support to persons with disabilities [26]. The importance of family social support for people with disabilities, family is the first and closest environment that can be a natural source of support for people with disabilities. Family and friend is a support system that can reduce the risk of depression and pressure among people with disabilities [27].

In particular, having social support and positive social experiences could outweigh other barriers that participants experienced [21]. Social support, which encapsulates attitudes, beliefs, and behaviours of all relevant stakeholders (family, peers, sport and recreation staff, programmes, organizations, and policymakers), strongly contributed to capability, opportunity, and motivation of young people and adults with physical disability to be active [28].

The barriers of the disability community for physical activity lies in terms of facilities, fitness facilities and infrastructure, safety aspects, economic aspects (limitations to pay sports instructor). It was highlighted most frequently reported factors negatively affecting physical participation in these rural populations. The previous study shown that the impact of the physical environment emerged as an important factor across all studies. Easily adapted or specialized equipment was reported to facilitate participation, as was having adequate space, the sidewalks have cracks, gaps, or are under construction, and accessible bathrooms [29]. However, environmental factors were most often reported as barriers to participation when facilities were not appropriate for the needs of young people with disabilities, for instance poor accessibility, poor physical layout, limited space to mobilize, and crowded environments [30].

The physical environment predominantly impacted opportunity factors. Inadequate community facilities, equipment, and transport were almost exclusively reported as barriers to participation [23]. This in turn had a negative impact on capability and motivation, contributing to concerns and apprehensions about being physically active, and deepening feelings of isolation in physical activity settings [21].

The previous study shown that the transport and high cost of admission to facilities for the disability people were universally reported as barriers to participation. The cost of specialized equipment such as sports wheelchairs was also identified as a specific barrier to being able to trial an activity before committing. These transport and cost barriers were more frequently reported by studies involving adult participants. although few studies explored these barriers in depth, so it is unclear who assumed responsibility for participation costs or provision of transport, particularly into adulthood [13].

Our findings illustrate physical activity participation for young people and adults with physical disabilities is primarily influenced by the social and physical environment. Physical activity participation was perceived as the right fit if predominantly enabling factors were experienced, or all too hard if barriers were experienced. Positive social connections, availability of social support, and an appropriate physical environment acted as essential elements to finding the right balance [24]. These elements provide a context with which to consider the complexity of capability, opportunity, and motivational factors affecting physical activity participation [21].

5. Conclusion

It can conclude that there is a large array of factors that can influence an individual's ability to engage in

regular physical activity. From the study, people who use wheelchairs in rural areas have more barriers to physical activity than people in urban areas. The dominant barriers occur in the aspect of family and friend support, and also barriers to external factors which include sports facilities and infrastructure, public facilities, and human resources in the field of sports. Facilities and infrastructure in urban areas are better than those in rural areas. Similar research with comparisons in several countries needs to be carried out in the future

Acknowledgements

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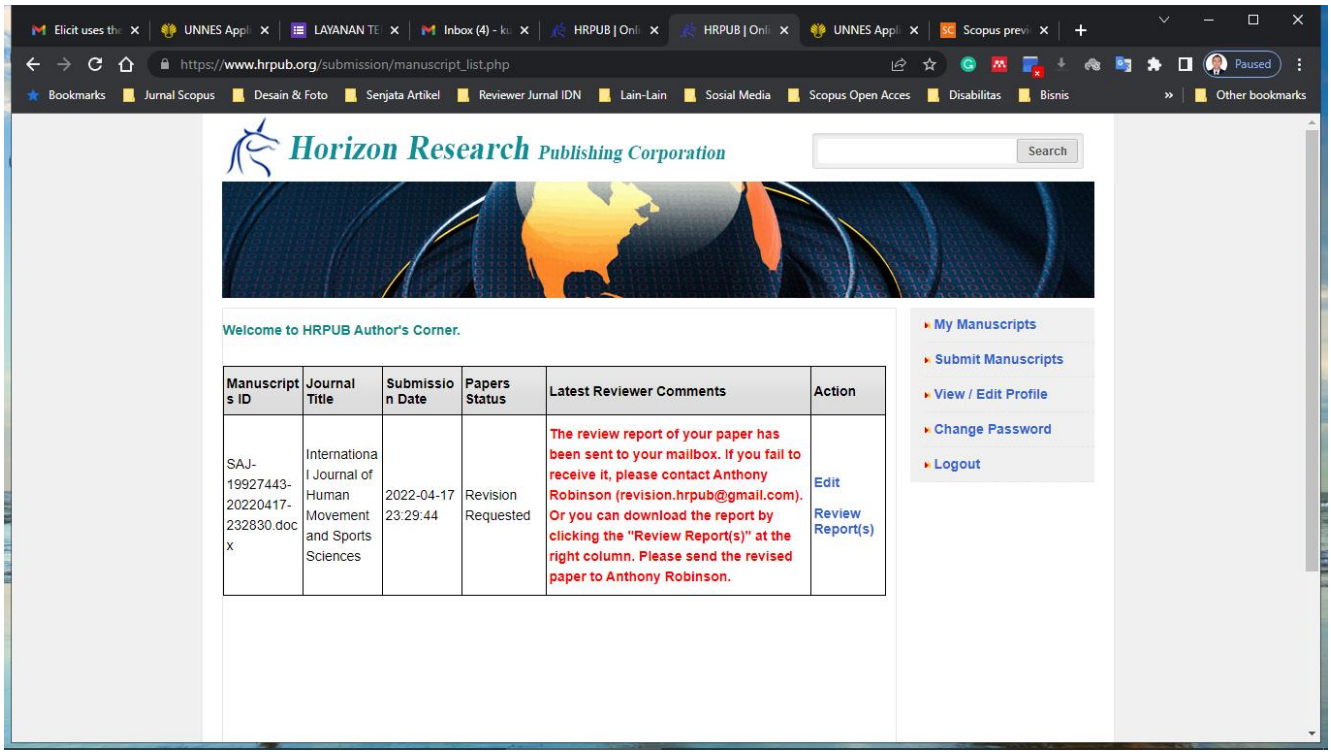

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Manuscript Information	
Manuscript ID:	**19927443**
Manuscript Title:	**Wheelchair Users Barriers in Physical Activity: Rural vs Urban Area**

Evaluation Report	
General Comments	**The topic of physical activity as a precondition for human health and wellbeing is of great importance worldwide, especially taking into account current challenges and developments and the need to address pandemia crisis and its consequences.** **Moreover, these challenges are more strenuous for people with disability whose activities depend on the environmental conditions simultaneously requiring often support from others. Thus, the example of comparing barriers in physical activity in rural and urban areas which experience wheelchair users is interesting, actual and it offers fruitful insights about key recommendations for improvements. Hence, the motivation on the study is emphasized, but the main advantages of the results in the paper comparing with others should be clearly demonstrated.** **The paper follows standard structure for scientific paper. The title, the stated goal and the study are consistent.**
Advantage & Disadvantage	**Overall, the paper contains adequate publishable information and presents valuable content on the subject field taking into consideration its presence and need of change. Statements on the background of the study is introduced and appropriate literature review is presented.** **But the methodology and the design of the empirical research is not described clear enough. Also, the analytical part is very weak and vague and there are gaps and weaknesses which must be addressed before paper to become publishable.** **An important disadvantage is also the language: grammar and used tenses are not always according to the rules and some of the terms (synonymous) are not understandable.** **My recommendations are summarized below and detailed comments are given in the text (file).**
How to improve	**I would recommend following amendments/improvements of the proposed paper:** **1) The abstract needs to be rewritten to better present the aim and main findings, to be better targeted.** **2) The methodological part should be extended. Please, revise the survey and the design of the research presentation, mention the constrains, explain why and how different choices are made, justify the number of the respondent (sample justification to achieve statistical significance of results and/or practical implications), articulate how the study design help to reveal the considered relationships/correlations.** **3) The discussion section could be improved and better interpretation/elaboration of/on the achieved results, including current attempt to identify interrelations with the findings in the existing literature explaining if they are in conformity and if they deviate. The analysis needs to be improved in order to be presented author's position as well. Thus, the author/s will be more convincing and could further demonstrate the paper's contributions.** **The presented conclusions are generalized and do not reflect all the issues revealed by the study. The sections would be more completed answering to the questions: "why and how similar studies need to be carried in other countries? and "what will**

	be the aim of such comparison and how current results provoke such suggestion?". Also, it should be recommended how the results/findings could be used from practical point of view, e.g. what recommendations to different actors (institutions etc.) would be feasible. **The sources of tables 1 and 2 are missing, even to be mentioned that the figures result from the study and own calculation. The second table should be simplified to reduce repeated information and to be presented in more consistent way – table on two pages embraces the reader.** **Major revision of the grammar is needed as well as harmonization of the used tenses which would make reading more smooth. The language needs to be improved and adapted.**

Please rate the following: (1 = Excellent) (2 = Good) (3 = Fair) (4 = Poor)	
Originality:	**2**
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Technical Quality:	**2**
Clarity of Presentation :	**2**
Depth of Research:	**3**

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Manuscript Information

Manuscript ID:	**19927443**
Manuscript Title:	**Wheelchair Users Barriers in Physical Activity: Rural vs Urban Area**

Evaluation Report

General Comments	The introduction showed how important engaging in physical activity is for all individuals and the impact it has on overall health and well-being. I don't have any required changes after reading your very well written manuscript. I did make some suggestions in the how to improve section (see below), that I think would provide readers with more details and information.
Advantage & Disadvantage	I think this study is very informative and provides readers with information on this specific population and the barriers people with disabilities face to get proper physical activity. I don't see any disadvantages to this study
How to improve	Overall, this study is very well written with a great methodology to measure what you set out to. Some suggestions to add to your paper 1. Details on the methods- who administered this survey, was email the best way and did it work? How many did you send out and what was the return rate? 2. You talk about the ecological model in the discussion, but not before this. Maybe mention it and introduce it in the introduction. This gives the reader a foundation to what it is and how it applies to your findings 3. You mentioned conducting this research in other countries, but how do you think the results connect to Indonesia? Mention in the conclusion that why these results were seen in this country? What contributed to the findings and the differences between rural and urban? Rural and urban are different in other countries, so highlight what this means in Indonesia. How do you define who was in the rural category and who was in urban?

	4. It would also be a good idea to add in the conclusion what you can do with this information and how changes can be made; specific to this population.
Please rate the following: (1 = Excellent) (2 = Good) (3 = Fair) (4 = Poor)	
Originality:	2
Contribution to the Field:	**2**
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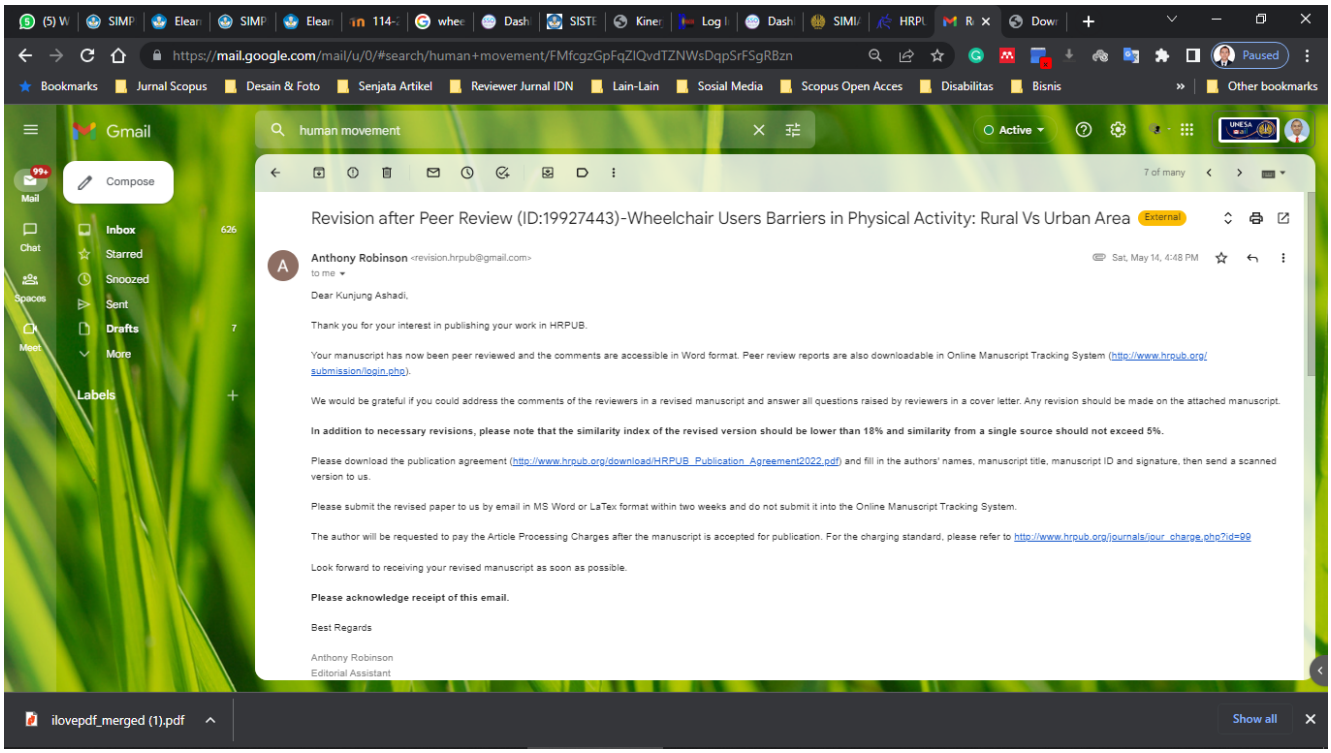

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Revision after Peer Review (ID:19927443)-Wheelchair Users Barriers in Physical Activity: Rural Vs Urban Area

Anthony Robinson <revision.hrpub@gmail.com>
to me

Dear Kunjung Ashadi,

Thank you for your interest in publishing your work in HRPUB.

Your manuscript has now been peer reviewed and the comments are accessible in Word format. Peer review reports are also downloadable in Online Manuscript Tracking System (http://www.hrpub.org/submission/login.php).

We would be grateful if you could address the comments of the reviewers in a revised manuscript and answer all questions raised by reviewers in a cover letter. Any revision should be made on the attached manuscript.

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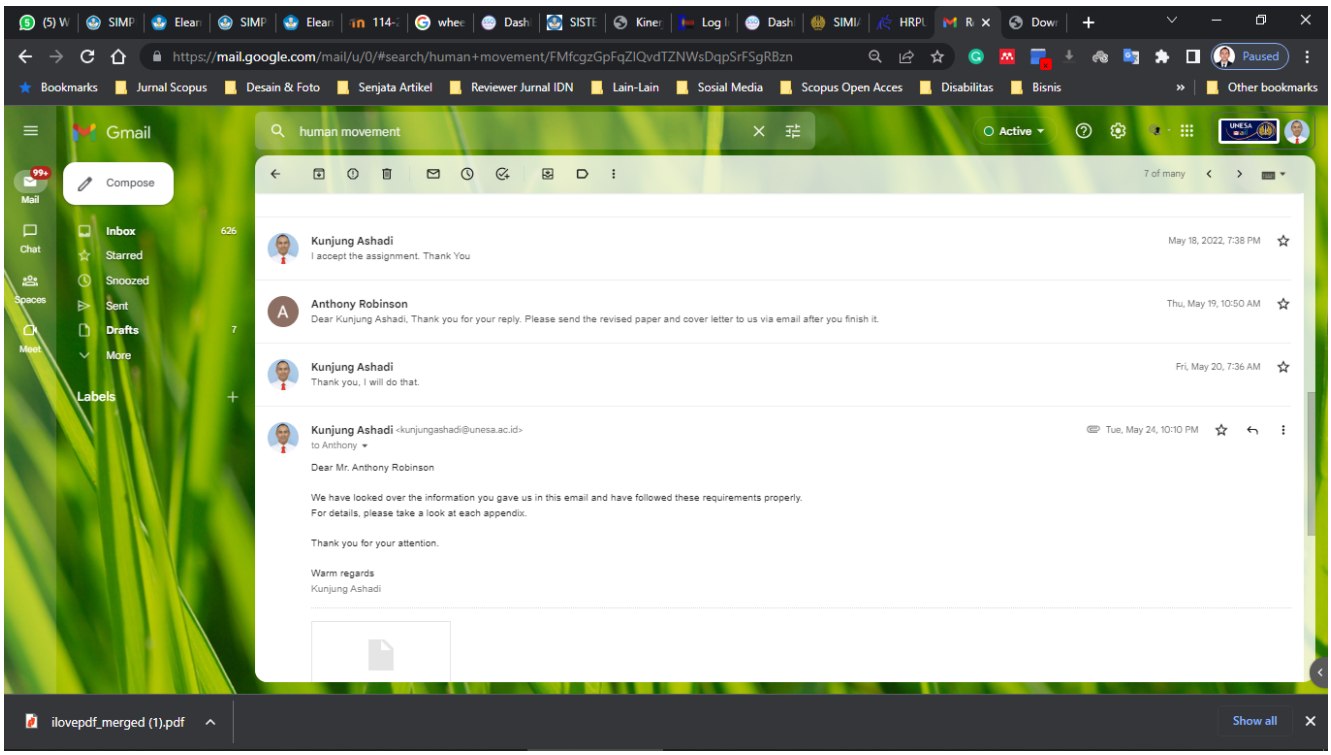

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Kunjung Ashadi
I accept the assignment. Thank You
May 18, 2022, 7:38 PM

Anthony Robinson
Dear Kunjung Ashadi, Thank you for your reply. Please send the revised paper and cover letter to us via email after you finish it.
Thu, May 19, 10:50 AM

Kunjung Ashadi
Thank you, I will do that.
Fri, May 20, 7:36 AM

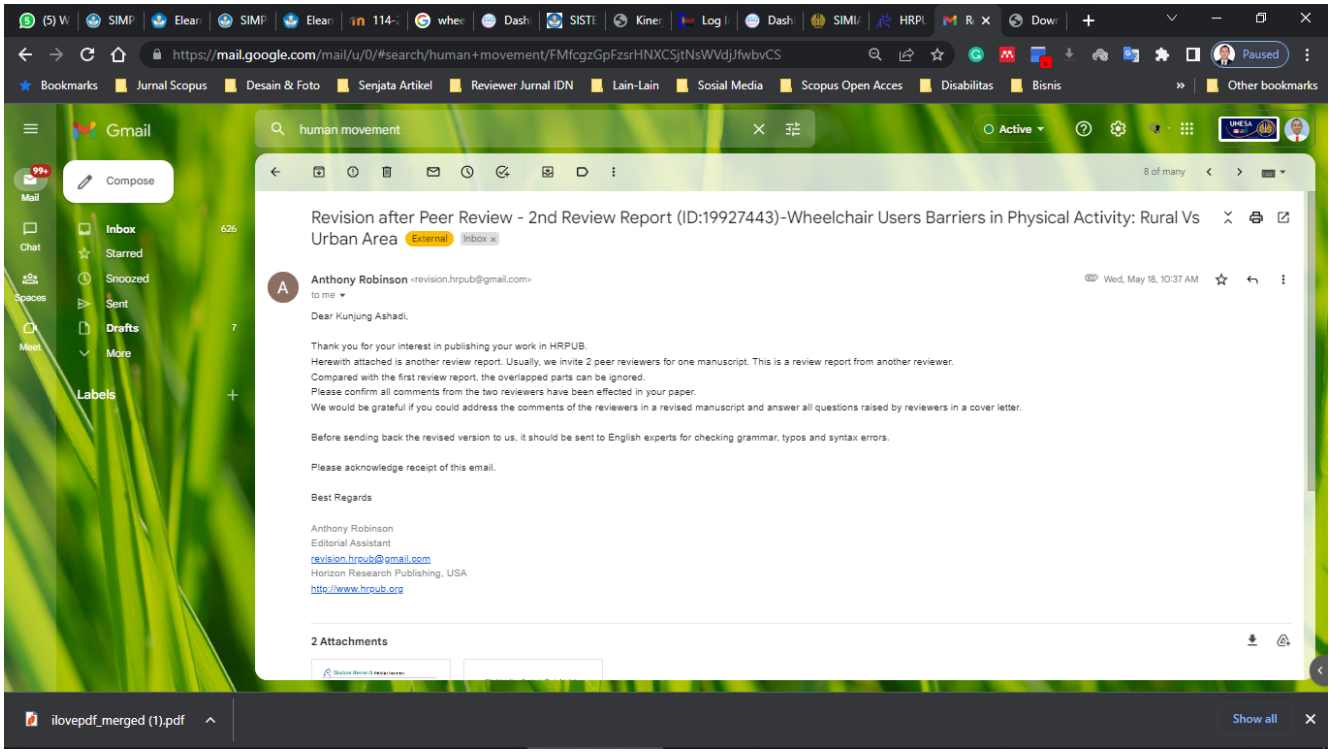
Kunjung Ashadi <kunjungashadi@unesa.ac.id>
to Anthony
Tue, May 24, 10:10 PM

Dear Mr. Anthony Robinson

We have looked over the information you gave us in this email and have followed these requirements properly.
For details, please take a look at each appendix.

Thank you for your attention.

Warm regards
Kunjung Ashadi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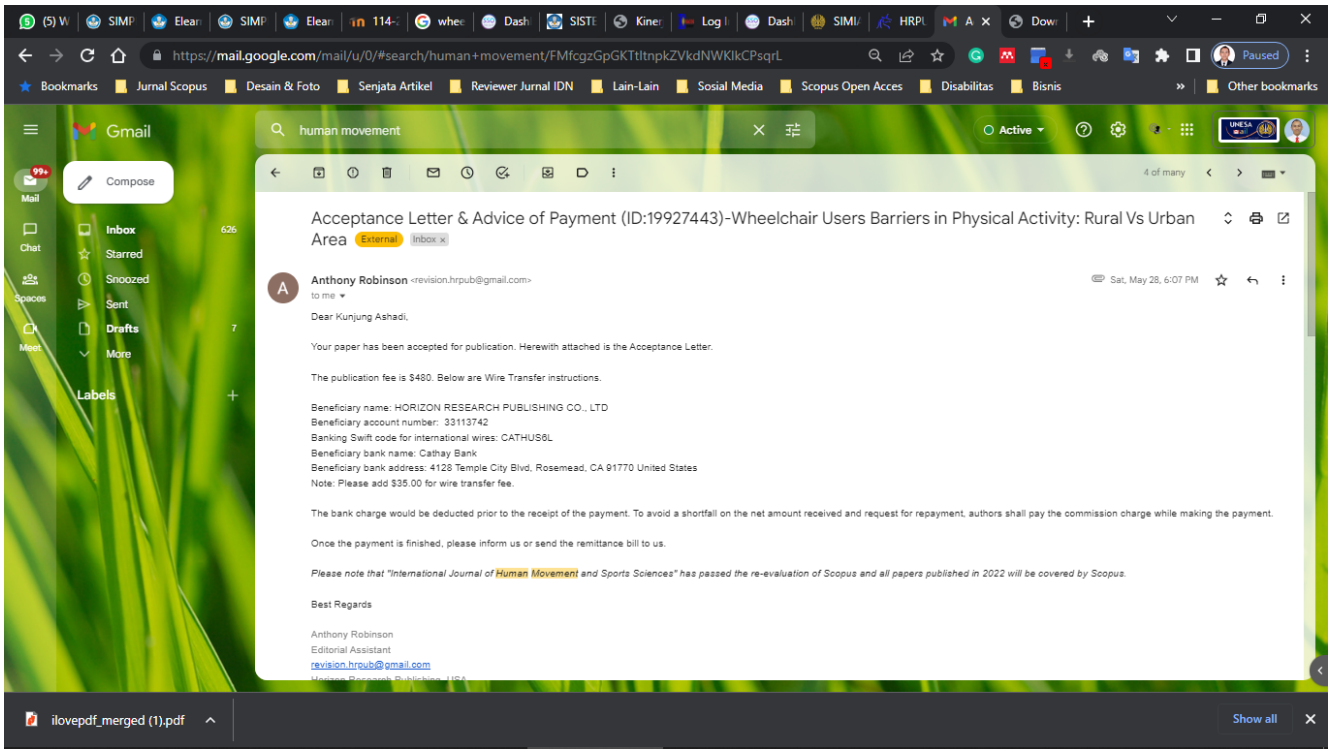

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Acceptance Letter & Advice of Payment (ID:19927443)-Wheelchair Users Barriers in Physical Activity: Rural Vs Urban Area

Anthony Robinson <revision.hrpub@gmail.com>
to me

Dear Kunjung Ashadi,

Your paper has been accepted for publication. Herewith attached is the Acceptance Letter.

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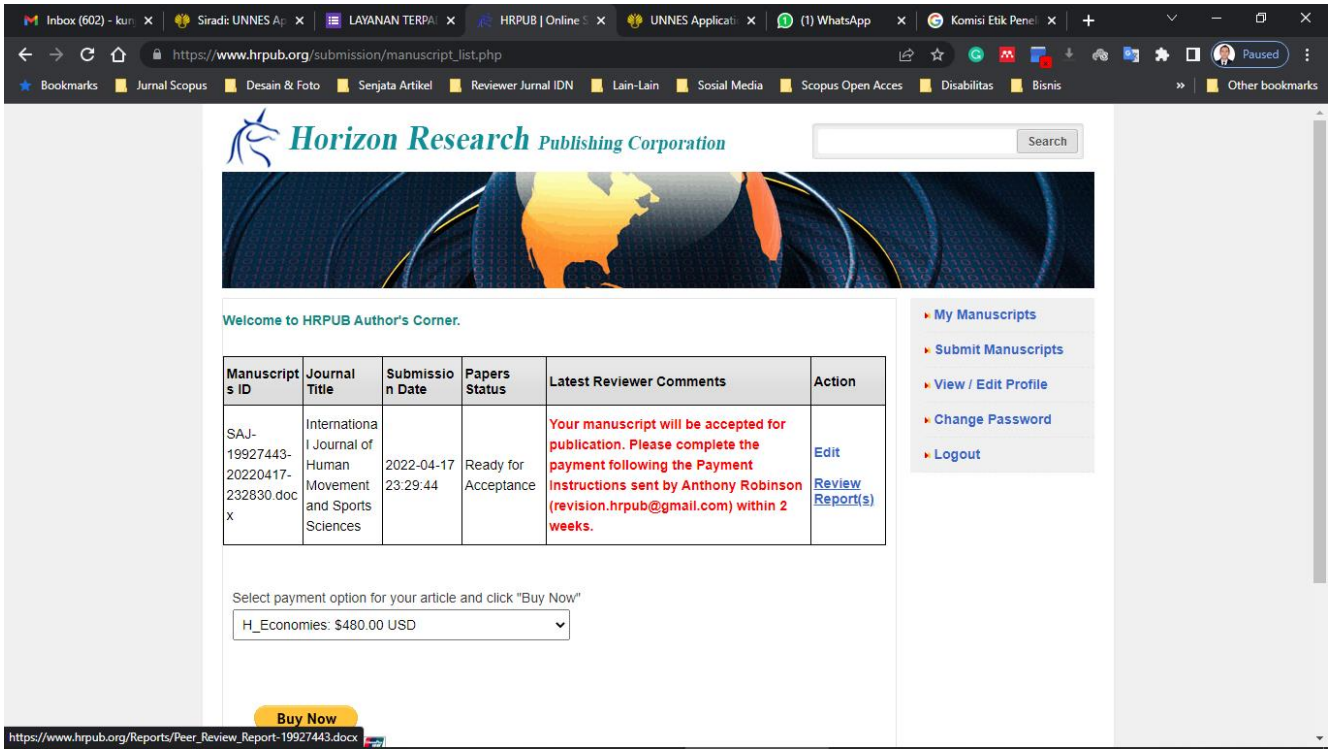

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International Journal of Human Movement and Sports Sciences

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Acceptance Letter

Dear Kunjung Ashadi ,

Congratulations! As a result of the reviews and revisions, we are pleased to inform you that your following paper has been accepted for publication.

Paper Title: Wheelchair User's Barriers in Physical Activity: Rural Vs. Urban Area

Paper ID: 19927443

Contributor (s): Kunjung Ashadi, Mochammad Purnomo, Subuh Isnur Haryudo, Oce Wiriawan, Hari Setijono, Soegiyanto, Sugiharto, Tri Rustiadi, Oktia Woro Kasmini Handayani, Shamsul Ahzar Shah

It is scheduled for publication on International Journal of Human Movement and Sports Sciences , Vol 10 , No 3 .

The publication fee $ 480 should be paid within 2 weeks.

Should you have any questions, please feel free to let us know by quoting your **Paper ID** in any future inquiries.

Best wishes,

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Wheelchair Users Barriers in Physical Activity: Rural Vs Urban Area

Kunjung Ashadi[1*], Shamsul Ahzar Shah[2], Oktia Woro Kasmini Handayani[3], Hari Setijono[4], Tri Rustiadi[3], Subuh Isnur Haryudo[4], Mochammad Purnomo[1], Oce Wiriawan[4]

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[2]Faculty of Medicine, Universiti Kebangsaan Malaysia, Kuala Lumpur, 56000, Kuala Lumpur, Malaysia
[3]Faculty of Sports Science, Universitas Negeri Semarang, Semarang, 19104, Jawa Tengah, Indonesia
[4]Faculty of Sports Science, Universitas Negeri Surabaya, Surabaya, 60213, Jawa Timur, Indonesia
*Corresponding Author: kunjungashadi@unesa.ac.id

Abstract Individuals with disabilities are less active and at greater risk for chronic diseases compared to the general population. Previous studies have identified physical activity levels and physical fitness levels without measuring barriers to physical activity. This study examines how wheelchair users in urban and rural areas assess barriers to physical activity. This study looks for the dominant factors that hinder the physical activity of wheelchair users in urban and rural areas. The method used a cross-sectional study using an online-based survey to obtain information about physical activity barriers among disabled people with wheelchair users. Therefore, the entire 41 research subject from urban areas, and 40 research subjects were from rural areas. The research subject was used for the analysis and assessed using Barriers Physical Activity Questionnaire Mobility Impairment (BPAQ-MI). The analysis data technique is an independent sample's T-test to know the difference of the physical activity barriers between wheelchair users in urban and rural areas. The results of this study are wheelchair users who live in rural areas have more barriers than wheelchair users in urban areas. The dominant barriers are friends and family as a support system ($p<0.05$), lack of public facilities ($p<0.05$), lack of fitness facilities and infrastructure ($p<0,05$), staff/program/policy ($p<0.05$), and community ($p<0.05$). The conclusion is that people who use wheelchairs in rural areas have greater barriers to physical activity than people in urban areas.

Keywords BPAQ-MI, Barriers, physical activity, rural, urban, wheelchair

1. Introduction

Sports provide children and adolescents with opportunities to belong, achieve fitness goals, and compete. Participation in sport can also influence life-long physical fitness and health habits in the era of increasing obesity and sedentary behavior in adolescence, plays a significant role in facilitating long-term cardiovascular health [1]. Physical activity participation is important for optimal health outcomes for everyone, including young people and adults with lifelong physical disabilities [2]. The previous study shown that participation rates for individuals with disabilities are low for all age groups, particularly in adolescence [3].

Due to their sedentary lifestyles, Andriana & Ashadi [4] individuals with lower limb disabilities have low levels of physical fitness, with an increased risk of acquiring other comorbidities such as type II diabetes, hypertension, cholesterol and metabolic syndrome. On the other hand, [5] adopting a healthy active lifestyle and regular physical activity participation positively affect their physical fitness. One of the reasons found in the literature that can justify the fact that these individuals adopt sedentary lifestyles is the existence of barriers/obstacles/constraints that make the practice of physical activity difficult ability (aerobic capacity, strength, balance and flexibility), cognition, health and quality of life [6]. The previous study show that some issues generalize to all audiences (e.g., limited time, or financial cost) however, others are more specific to wheelchair users, such as the fear of stereotyping [7]. Focusing on young users, revealed barriers which included attitude, motivation, existing injury or fear of developing injuries, limited facilities, and a lack of information or knowledge [8].

Regular physical activity is known to be important for general health and wellbeing. However, it has been shown that many of the estimated 65 million manual wheelchair users in the world do not achieve recommended levels of activity, and miss out on the associated health benefits, such as reduced physical pain and a lower risk of depression [9]. There are profound physical and psychological health risks associated with physical inactivity and abundant health benefits associated with an active lifestyle [10]. The health benefits of physical activity are many, including a lower risk of all-cause mortality, lower incidence of cardiovascular

disease, hypertension, type 2 diabetes, and a number of cancers. This evidence base has led to physical activity being considered a key factor for optimal health [11]. Yet the number of people doing enough physical activity to reap these health benefits are too few, the majority of the population is moving less and sitting more [12].

People living with disabilities have poorer health than the general population. The previous study said that people living with disabilities are at a greater risk of injury and of developing non-communicable chronic diseases and age-related health conditions at earlier ages [13]. Physical activity is beneficial for most people living with disabilities and, importantly, no evidence suggested that physical activity is harmful to this population. Physical activity was positively associated with cardiorespiratory fitness, muscular strength, functional skills, psychosocial wellbeing, and indicators of cardiometabolic health in people with physical or cognitive disabilities [14]. Similarly, systematic reviews underpinning the new US and WHO physical activity guidelines reported that physical activity was associated with improved physical function, cognition, and quality of life among people with disabilities [14].

It is well documented for the general population that a physically active lifestyle is beneficial for a person's health. An active lifestyle is even more important for wheelchair users [15]. The previous study shown that wheelchair users with spinal cord injury or lower limb amputation, physical inactivity, being overweight, lower life satisfaction and low vitality are frequently reported problems [3]. A cycle of deconditioning can arise, in which an inactive lifestyle leads to an increase in body weight, resulting in secondary problems as fatigue, distress, low vitality and sleeping disorders, which in turn lead to an even more inactive lifestyle [3]. A physically active lifestyle can break this cycle and could improve everyday functioning, reduce disability, and reduce the risk of secondary health problems in people with physical disabilities [16].

The previous study about physical activity in wheelchair users have focused on physical health benefits and individual fitness level. Study for young people and adults with childhood-onset physical disability, the barriers and facilitators to physical activity participation are not well understood. For this reason, the novelty of study to present systematic review is to contribute to a better understanding of the perceived barriers of physical activity participation in individuals disability with wheelchair user in urban areas and rural areas. It is important to identify determinants of the barriers physical activity in order to understand the problem of physical inactivity thoroughly, and to be able to develop targeted behavioural change strategies. In literature, demographics (e.g., age, gender), health-related factors, psychological factors, social factors and environmental factors are reported to be possible determinants of physical activity in wheelchair users [17].

However, physical activity experiences in childhood and adolescence with disabilities can influence long-term health behaviours [18]. The transition from adolescence to young adulthood is a crucial period for shaping long-term physical activity behaviours and addressing risk factors for chronic health conditions [19]. It is also an important time for psychosocial health, where young people with disabilities experience poorer mental health outcomes compared to their peers [20]. Adults with disabilities report high levels of depression, loneliness, and social isolation, and difficulty developing and maintaining relationships [2]. Physical activity can provide a sense of belonging, reduce social isolation, and improve quality of life with emerging evidence suggesting people with physical disabilities value the psychosocial benefits of being active, such as having fun, feeling capable, and fitting in with their peers [21].

2. Methods

The present study was a cross-sectional study using an online-based survey to obtain information about physical activity barriers among disability people with wheelchair user in urban and rural areas. The purpose of this study was to observe physical activity barriers in wheelchair users throughout Indonesia. It is not easy to get data about the barriers to physical activity in wheelchair users, therefore, to distribute the online questionnaire (BPAQ-MI) to all wheelchair users in Indonesia, collaboration with a wheelchair user organization namely United Celebral Palsy Roda Untuk Kemanusiaan (UCPRUK) is needed. UCPRUK has been committed since 2009 until now to serving people with mobility impairments, especially wheelchair users in Indonesia.

Perceived barriers for physical activity, assessed using the Barriers to Physical Activity Questionnaire for People with Mobility Impairments (BPAQ-MI). Demographic characteristics queries included age, gender, and city of residence. The BPAQ-MI consisted of 61 items distributed over four domains, with each domain divided into two subdomains. The eight subdomains, which are based on an ecological model of health promotion describing how the individual interacts with the environment, describe health and attitudes/beliefs towards physical activity (intrapersonal); friends and family (interpersonal), fitness centre built environment and staff/program/policy (organizational), and community built environment and safety. The BPAQ-MI's general structure was to ask the respondent to indicate whether he/she experienced a barrier that hindering them from engaging in physical activity. Therefore, the entire 41 respondents from urban areas and 40 respondents from rural areas. The analysis data technique is an independent sample's t-test to know the difference of the physical activity barriers between wheelchair users in urban and rural areas.

3. Results

Table 1. The profile of research subject

The Profile of Research Subject	Percentage
Gender	
Male	57%
Female	43%
Age	
Less than 25 years old	16,5%
More than 26 years old	83,5%
How long have you been a disabled person	
Less than 25 years ago	54,4%
More than 26 years ago	44,6%

Table 2. The detail of the barriers physical activity of research subject

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Health					
You get tire or fatigued	0,235	8	11	20%	28%
You were in pain	0,922	2	3	4%	7%
You believe physical activity requires too much work/effort/energy	0,722	28	34	70%	83%
You didn't have an appropriate fitness level to be physically active (e.g., lack of aerobic ability)	0,014	11	24	27%	61%
You felt physical discomfort while being physically active	0,037	9	26	22%	66%
You were afraid of getting injured while being physically active	0,447	31	33	76%	83%
You were depressed	0,345	8	11	5%	8%
Beliefs/Attitudes towards physical activity					
You lack the motivation to be physically active	0,717	23	24	55%	60%
You don't have confidence in your ability to be physically active	0,122	23	27	55%	68%
You were embarrassed about your appearance while being physically active	0,729	5	4	11%	9%
You have not seen positive results from previous physical activity	0,340	3	5	7%	13%
You feel you are too old to be physically active	0,568	9	12	23%	30%
You didn't think physical activity would help you	0,832	3	6	8%	15%
Being physically active is not enjoyable	0,508	5	7	12%	17%
You don't see a reason to be physically fit	0,387	4	5	10%	13%
Friends					
You did not have another person with a disability who was physically active to look up to	0,000	14	30	34%	75%
Your friends didn't assist you to be physically active	0,000	11	27	26%	68%
Your friends are not physically active	0,000	12	29	29%	72%
Your friends don't talk about being physically active	0,000	13	32	31%	80%

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Your friends were not encouraging or supportive of your efforts to be physically active	0,000	9	31	22%	78%
Your friend's priorities take precedence/priority over you being physically active	0,000	5	22	13%	56%
Family					
Your family's culture, beliefs, or morals did not place physical activity as a priority	0,002	7	23	17%	57%
Your family did not assist you to be physically active	0,008	5	25	12%	62%
Your family members are not physically active	0,003	10	28	25%	70%
Your family members were not encouraging or supportive of your efforts to be physically active	0,003	7	21	17%	52%
Your family did not think physical activity would be helpful to improve your health	0,009	4	18	9%	45%
Fitness Centre Built Environment					
Lack of accessible exercise equipment at fitness centre	0,000	5	39	11%	97%
The walkways/aisles were too narrow or had obstacles	0,000	8	37	20%	92%
lack of accessible door handles	0,000	3	36	7%	90%
Lack of accessible curb cuts at fitness centre	0,000	10	38	24%	96%
ground that you walk/roll on was not accessible	0,000	11	35	28%	87%
Lack of accessible ramps at fitness centre	0,000	13	38	31%	94%
Lack of accessible bathrooms at fitness centre	0,000	12	39	29%	98%
Lack of accessible showers/locker rooms	0,000	14	39	33%	98%
Lack of accessible elevators at fitness centre	0,000	15	40	36%	100%
Lack of accessible parking at fitness centre	0,000	17	36	41%	90%
Lack of access to indoor track for walking/wheeling	0,000	16	39	40%	98%
Staff/Program /Policy					
Fitness centre membership fees were too high	0,000	5	38	13%	96%
Your health insurance plan do not cover membership fees	0,533	36	38	89%	94%
Lack of inclusive marketing	0,000	7	35	17%	87%
Lack of accessible classes/programs at fitness centre	0,000	9	37	23%	93%
Other fitness centre members were mean or rude	0,000	13	36	32%	91%
Lack of accessible walking/rolling paths at parks	0,000	10	37	24%	93%
Lack of assistance from fitness centre staff	0,000	11	39	27%	97%
Lack of accessible sport opportunities at fitness centre	0,000	13	39	31%	98%
Signs showing where things are located were not accessible	0,000	14	38	35%	96%
Lack of interpretive services (e.g. sign language)	0,000	13	39	32%	97%
Community Built Environment					
Lack of access to public restrooms	0,000	12	38	29%	95%
uneven or crooked sidewalks	0,000	13	39	32%	97%
The sidewalks have cracks, gaps, or are under construction	0,000	9	34	21%	86%
Lack of rest areas (e.g. benches)	0,000	12	38	30%	96%
Potholes in the street, driveways, or parking lot	0,000	14	36	34%	90%
sidewalk's cross slope is too steep/slanted	0,000	14	37	33%	92%
The crosswalks lack traffic lights	0,000	18	35	45%	87%

The Barriers Physical Activity Of Research Subject	p	n		Prevalence Rate (%)	
		Urban	Rural	Urban	Rural
Lack of accessible curb cuts in community	0,000	13	36	31%	89%
Lack of accessible transportation to fitness centre	0,000	16	37	40%	93%
Sidewalks were not wide enough	0,000	9	39	23%	97%
Safety					
excessive crime or fear of crime in neighbourhood	0,147	2	1	5%	3%
the cars drive too fast	0,568	15	11	36%	28%
excessive car traffic in my community	0,000	35	19	85%	48%
the traffic lights or crosswalk signals change too quickly	0,038	36	7	87%	18%
lack of adequate street lighting at night	0,006	5	18	11%	45%
loose dogs in community	0,755	2	1	5%	3%

Regarding participants' response to a question about barriers to exercise question on table 2, The first factors is health. There are differences between wheelchair users who live in urban and rural areas in the fitness level to be physically active (e.g. lack of aerobic ability) ($p<0,05$). Additionally, they believe physical activity requires too much work/effort/energy and afraid of getting injured while being physically active. They didn't have an appropriate fitness level to be physically active because they felt physical discomfort while being physically active and get tired or fatigued easily.

Beliefs/Attitudes towards physical activity is individual factors such as motivation and self-efficacy influence engagement in physical activity. Viewed through a socio ecological lens, factors beyond the individual-interpersonal, organizational, community, and environmental also influence engagement in physical activity. These factors could include access to places to be physically active safe places free from danger, convenient places within close enough proximity to homes or workplaces, and affordable places at a free or low price point. Overcoming challenges to physical activity among underserved populations must include addressing affordability and accessibility of opportunities to engage in physical activity. Based on the results of the study, it is stated that people with disabilities do not have obstacles in their beliefs / attitudes to carry out their physical activities ($p>0,05$).

Friends, family, and culture can be broadly defined as a shared set of meanings and ideas held by a group of people. Physical activity beliefs and behaviours are shaped not only by an individual's cultural characteristics, but also the cultural context (e.g., family, neighbourhood, institutions, society) within which they live, move, and play. Culture, by definition, encompasses the social determinants of health. As such, physical activity should not target only the individual, but should be inclusive of the cultural context that nurtures a person's health behaviour in his or her family and community. Based on the results of the study, Wheelchair users who live in rural areas have barriers in their friends, family, and culture to carry out their physical activities ($p<0.05$).

The low physical activity levels in wheelchair users also lie in unequal opportunities to be physically active. The difference of access to facilities (e.g., recreation/ fitness centres, parks) and the safety or attractiveness of one's neighbourhood play an important role in whether people use such spaces to engage in physical activity ($p<0,05$). Lack of access to equipment, and convenient facilities have been reported in the rural area ($p<0,05$). This suggests that wheelchair users in rural populations may have limited ability to control their physical activity behaviours in the face of inaccessible environments, and barriers may vary by gender ($p<0,05$). The research data have reported that external barriers of factors are the most dominant factor in preventing people in rural areas from doing physical activities ($p <0.05$). The intended external factor is about the completeness of facilities and infrastructure to support physical activity in their environment. Facilities and infrastructure in urban areas are better than those in rural areas ($p<0.05$). The barriers are poor accessibility, poor physical layout, limited space to mobilize, and crowded environments ($p<0.05$).

4. Discussion

Reduced physical fitness level is strongly associated with increased all cause mortality in the general population. Individuals with disabilities are less active and at greater risk for chronic diseases compared to the general population. Lower extremity impairments leading to wheelchair use are a common disability and force individuals to rely on their upper-extremities for activities of daily living. Morbidity and physical deconditioning must be prevented or limited to preserve independence, social functioning and quality of life [22].

The potential barriers reflected all levels of the ecological

model, including interpersonal

factors (e.g., lacking energy, don't know where to exercise, too lazy to exercise, lack of motivation, not enough time to exercise, health concerns prevent them from exercising), intrapersonal factors (e.g., worry that people might make fun of them, no one to exercise with, no one shows them how to exercise), and organization/community factors (e.g., equipment is not made from someone with their disability, fitness centres are not accessible [23].

This study's findings have several implications for practice, and for researchers seeking to further explore barriers to physical activity among this group. The health aspect of factors that can influence an individual's ability to engage in regular physical activity. Health is a barrier factor for physical activity because research subjects with disabilities feel they have a weak body to carry out physical activities which are considered difficult to do [24]. The limited number of limbs makes people with disabilities find it difficult to do exercises and have fears about the risk of injury [3]. It is known that the lower extremities are the foundation of all body movements. The lower extremities play an important role in maintaining body balance, supporting the body, and the strongest muscles are in the lower extremities [25].

Based on the results of the study, it was shown that people with disabilities in urban area do not have barriers in their beliefs / attitudes, and they have support system from family and friends to doing their physical activity. Meanwhile the people with disabilities in rural area have barriers in their support system from family and friends to doing their physical activity. Family as the closest environment becomes an important part that can provide social support to persons with disabilities [26]. The importance of family social support for people with disabilities, family is the first and closest environment that can be a natural source of support for people with disabilities. Family and friend is a support system that can reduce the risk of depression and pressure among people with disabilities [27].

In particular, having social support and positive social experiences could outweigh other barriers that participants experienced [21]. Social support, which encapsulates attitudes, beliefs, and behaviours of all relevant stakeholders (family, peers, sport and recreation staff, programmes, organizations, and policymakers), strongly contributed to capability, opportunity, and motivation of young people and adults with physical disability to be active [28].

The barriers of the disability community for physical activity lies in terms of facilities, fitness facilities and infrastructure, safety aspects, economic aspects (limitations to pay sports instructor). It was highlighted most frequently reported factors negatively affecting physical participation in these rural populations. The previous study shown that the impact of the physical environment emerged as an important factor across all studies. Easily adapted or specialized equipment was reported to facilitate participation, as was having adequate space, the sidewalks have cracks, gaps, or are under construction, and accessible bathrooms [29]. However, environmental factors were most often reported as barriers to participation when facilities were not appropriate for the needs of young people with disabilities, for instance poor accessibility, poor physical layout, limited space to mobilize, and crowded environments [30].

The physical environment predominantly impacted opportunity factors. Inadequate community facilities, equipment, and transport were almost exclusively reported as barriers to participation [23]. This in turn had a negative impact on capability and motivation, contributing to concerns and apprehensions about being physically active, and deepening feelings of isolation in physical activity settings [21].

The previous study shown that the transport and high cost of admission to facilities for the disability people were universally reported as barriers to participation. The cost of specialized equipment such as sports wheelchairs was also identified as a specific barrier to being able to trial an activity before committing. These transport and cost barriers were more frequently reported by studies involving adult participants. although few studies explored these barriers in depth, so it is unclear who assumed responsibility for participation costs or provision of transport, particularly into adulthood [13].

Our findings illustrate physical activity participation for young people and adults with physical disabilities is primarily influenced by the social and physical environment. Physical activity participation was perceived as the right fit if predominantly enabling factors were experienced, or all too hard if barriers were experienced. Positive social connections, availability of social support, and an appropriate physical environment acted as essential elements to finding the right balance [24]. These elements provide a context with which to consider the complexity of capability, opportunity, and motivational factors affecting physical activity participation [21].

5. Conclusion

It can conclude that there is a large array of factors that can influence an individual's ability to engage in regular physical activity. From the study, people who use wheelchairs in rural areas have more barriers to physical activity than people in urban areas. The dominant barriers occur in the aspect of family and friend support, and also barriers to external factors which include sports facilities and infrastructure, public facilities, and human resources in the field of sports. Facilities and infrastructure in urban areas are better than those in rural areas. Similar research with comparisons in several countries needs to be carried out in the future

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