JUSHPEN
Jurnal Sosial Humaniora dan Pendidikan
OPEN ACCESS
JUSHPEN Vol 4 No. 3 Desember 2025 | ISSN: 2829-0410 (Print), ISSN: 2829-0534 (online), Hal 129-138

Social Functioning of Persons with Disabilities Who Use Three-Wheeled Motorcycles

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Article History
Received : 15 October 2025
Revised : 20 November 2025
Accepted : 31 Desember 2025
Published : 31 Desember 2025

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Cite This Article:
Khan, K. V., Azaleya, A. M., Rosadi, D. S., & Ardradhika, A. N. (2025). Social Functioning of Persons with Disabilities Who Use Three-Wheeled Motorcycles. Jurnal Sosial Humaniora Dan Pendidikan, 4(3), 129–138.

DOI:
https://doi.org/10.56127/jushpen.v4i3.2444

Abstract: This study explores the social functioning of persons with disabilities who use modified three wheeled motorcycles as a means of mobility and daily activity support. Using a qualitative approach with a phenomenological perspective, the research examines lived experiences related to independence, social participation, and role fulfillment within the community. Data were collected through in depth interviews and observations, then analyzed thematically to identify recurring meanings and patterns. The findings indicate that the use of three wheeled motorcycles contributes positively to mobility autonomy, access to social interaction, and the ability to perform economic and social roles. The vehicle functions not only as a transportation tool but also as a symbol of independence and self confidence. However, several challenges remain, including technical limitations, environmental barriers, maintenance issues, and social perceptions. Overall, the study highlights the importance of accessible transportation in strengthening social functioning and emphasizes the need for supportive policies, inclusive infrastructure, and community awareness to enhance the quality of life of persons with disabilities.

Keywords: Social Functioning, Persons With Disabilities, Accessibility, Mobility, Three Wheeled Motorcycle

INTRODUCTION

Transportation is an object that plays an important role in human daily life. It is not merely related to traveling from one place to another, but also strongly supports individuals in achieving independence in their everyday activities, such as going to school, working, or spending leisure time with family. There are various types of transportation, ranging from private vehicles used individually to public transportation used collectively. For people without disabilities, traveling independently is relatively easy using different modes of transportation such as cars, bicycles, or motorcycles. However, independent mobility is not easily achieved by persons with disabilities, particularly those with impaired bodily functions.

In the use of transportation, persons with disabilities can access different modes depending on the severity of their condition. Individuals with mild disabilities may use the same transportation as non-disabled people, sometimes with minor modifications such as adjustments to tires, steering systems, or seating. In more severe cases, the disability may prevent individuals from moving from one place to another without assistance. Persons with disabilities affecting the arms and legs are able to travel, but they generally cannot operate standard vehicles designed for non-disabled users. Therefore, vehicles must be modified to be accessible, including the use of specially modified three-wheeled motorcycles.

Modified three-wheeled motorcycles have become one of the practical solutions to enhance accessibility for persons with disabilities in their daily lives. Through this modification, limitations in mobility are reduced, enabling users to travel safely, comfortably, and independently. Accordingly, this study discusses the benefits of modified three-wheeled motorcycles for persons with disabilities.

RESEARCH METHOD

This study employed a qualitative research design to gain an in depth understanding of the social functioning of persons with disabilities who use modified three wheeled motorcycles in their daily lives. A qualitative approach was considered appropriate because the research aimed to explore personal experiences, meanings, and interpretations related to independence, mobility, and social participation from the perspective of the participants themselves.

The research was conducted using a phenomenological approach, which focuses on capturing lived experiences as they are perceived and interpreted by individuals. This approach allowed the researchers to explore how participants experience the use of modified three wheeled motorcycles and how this form of transportation influences their daily activities, social roles, and interactions within the community.

Participants were selected through purposive sampling based on specific criteria relevant to the research objectives. The selection process ensured that all participants were persons with disabilities who actively used modified three wheeled motorcycles as their primary means of transportation. This strategy enabled the study to obtain rich and relevant data that reflected the real conditions and experiences of the users.

Data collection was carried out through in depth interviews and direct observation. Interviews were conducted in a flexible and conversational manner to create a comfortable environment, allowing participants to openly share their stories, challenges, and perceptions. Observations were used to complement interview data by capturing real situations related to mobility, vehicle use, and social interaction.

The data obtained from interviews and observations were analyzed using thematic analysis. The analysis process involved organizing data through coding, grouping similar meanings, and identifying emerging themes that represented key aspects of social functioning. This process was conducted continuously to ensure that interpretations remained closely connected to the participants' narratives.

To enhance the credibility of the findings, data triangulation was applied by comparing information obtained from different participants and data collection techniques. Member checking was also conducted by sharing preliminary interpretations with participants to ensure that the findings accurately reflected their experiences and viewpoints.

Ethical considerations were carefully addressed throughout the research process. Participants were informed about the purpose of the study and their voluntary involvement, and informed consent was obtained prior to data collection. Confidentiality and anonymity were maintained to protect participants' identities and to ensure that the research was conducted in a respectful and responsible manner.

RESULT AND DISCUSSION

Description of Participants and Motorcycles

Table 1. Description of Participants and Motorcycles

Subject	Type of Disability	Type of Motorcycle	Modification Workshop
HP	Knee impairment	Automatic motorcycle	Pak Catur Bambang Workshop (Tangerang)
KM	Achondroplasia	Automatic motorcycle	Pak Catur Bambang Workshop (Tangerang)
SL	Paraplegia	Manual motorcycle	Kharina Foundation Workshop (Klaten)
EZ	Congenital lower limb disability	Sport motorcycle	RC Jaya Motor (Central Jakarta)
HR	Spinal Cord Injury or paraplegia	Sport motorcycle	RC Jaya Motor (Central Jakarta)
AG	Paraplegia	Automatic motorcycle	Pak Catur Bambang Workshop (Tangerang)

The study involved six participants with different physical conditions who used modified three wheeled motorcycles to support their mobility. The first participant, HP, is a male with knee problems that limit his ability to support body weight when riding a standard motorcycle. He uses walking aids in daily life and chose a three wheeled automatic motorcycle by adding an extra rear wheel to improve balance and safety.

The second participant, KM, is a male with achondroplasia, a genetic condition affecting bone growth. Although he does not use mobility aids, his shorter legs make it difficult to ride a standard motorcycle. He therefore uses a modified automatic three wheeled motorcycle with additional rear wheels to achieve better stability.

The third participant, SL, is a female with paraplegia who relies on a wheelchair for daily mobility. Her manual motorcycle was modified by relocating the braking system to the hands, adding hand controls for gear shifting, and installing a sidecar system to support balance and steering.

The fourth participant, EZ, is a male with a congenital lower limb disability who primarily uses his hands or a wheelchair for mobility. His sport motorcycle was modified into a three wheeled vehicle with rear wheels, a differential system, and hand operated controls to enable independent travel.

The fifth participant, HR, is a male with paraplegia who uses a wheelchair daily. His sport motorcycle was modified similarly with rear wheels, a differential system, hand controlled braking and gear shifting, and an additional wheelchair storage space behind the seat.

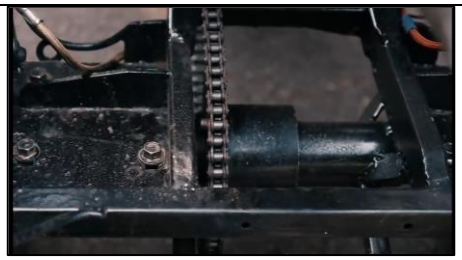
The sixth participant, AG, is a male with paraplegia who also uses a wheelchair. His automatic three wheeled motorcycle includes rear wheel modifications, a differential system, a reverse gear feature operated by hand controls, and a wheelchair storage area to support independent mobility.

Table 2. Description of Modified Motorcycle Components

Type of Motorcycle	Modified Motorcycle Components	Description

Automatic Motorcycle		In the adjacent image, it can be seen that an additional wheel has been added. The motorcycle, which originally had two wheels, was modified by adding an extra wheel at the rear, resulting in two wheels at the back and one wheel at the front. This wheel modification was applied to both automatic and manual motorcycles. The configuration with two rear wheels was used by five participants in this study, including those with paraplegia, achondroplasia, knee problems, and congenital lower limb disabilities.
		The adjacent image shows the rear part of the motorcycle, where a shaft or metal bar connects the two rear wheels. This shaft modification helps maintain balance when only one of the rear wheels rotates on either the right or left side. The participants who applied this modification were HP, AG, and KM, who are persons with paraplegia and achondroplasia.

		Gambar disamping merupakan tempat kursi roda yang menjadi bagian modifikasi motor roda tiga. Di bagian belakang jok terdapat tambahan tempat berupa rangkaian besi yang digunakan untuk menyimpan kursi roda subjek ketika mengendarai motor roda tiga. Penambahan tempat kursi roda dilakukan oleh subjek AG dan HR yang merupakan penyandang paraplegia dimana kedua subjek tersebut menggunakan kursi roda sebagai alat bantu untuk bermobilitas.
Sport Motorcycle	 	The two adjacent images show the clutch, gear, and brake components of sport or manual motorcycles that have been modified to a hand operated system. The gear shifting, clutch, and braking systems, which were originally controlled by the feet, were relocated and can be operated using the hands, allowing the users to ride the three wheeled motorcycle without relying on their legs. This modification was applied by participants EZ, HR, and SL, who

		are persons with paraplegia and congenital lower limb disabilities.
		The adjacent image shows the differential axle that was added to the modified three wheeled motorcycle. The differential axle helps the two rear wheels move more evenly during use. With the application of the differential system, both rear wheels are able to rotate simultaneously, providing better balance and stability. This modification was applied by participants EZ and HR.
Manual (Gear) Motorcycle		The adjacent image shows a manual or gear motorcycle that has been modified by adding a sidecar, with the handlebars positioned in the center between the sidecar and the motorcycle. The rider accesses the sidecar using a wheelchair and operates the motorcycle while remaining seated in the wheelchair. This modification was applied by participant SL, who is a person with paraplegia. The participant uses a wheelchair for daily activities, making this type of modified

		motorcycle suitable, as it allows direct access and operation of the vehicle while using the wheelchair.
		The adjacent image shows the addition of a brake lever at the front of the modified motorcycle. This brake lever makes it easier for the participant to operate the motorcycle because the braking control is placed in the hands. This modification was applied by participant SL, who is a person with paraplegia.

Suitability of Three Wheeled Motorcycles

Modified three wheeled motorcycles have several distinctive features compared to standard two wheeled motorcycles. Most participants explained that the main modifications include the addition of rear wheels and the relocation of control systems, such as gear shifting and braking, to the hands. The rear axle is also extended to connect both rear wheels, allowing better balance. All controls are hand operated, enabling users to ride without lowering their legs. Modification standards vary across workshops and are adjusted according to both the modifier's skills and the user's physical abilities.

Three wheeled motorcycles offer several advantages, including improved stability, hand operated brakes, and fuel access positioned near the handlebars, which allows riders to remain seated when stopping. Participants noted that the three wheel structure eliminates the need to lower the feet at traffic lights and reduces transportation expenses by minimizing reliance on public transport. Some public facilities also provide designated parking spaces that support accessibility.

However, technical limitations remain. The larger size of three wheeled motorcycles creates parking difficulties and limits overtaking ability. Some users still require assistance when mounting the vehicle. Safety concerns were also reported, particularly on sloped roads, sharp turns, uneven surfaces, and potholes. Ergonomic issues arise from the rotation of only one rear wheel, which can cause imbalance and directional pull during braking. Maintenance challenges were also noted, as certain components frequently require repair and specialized workshops are limited.

Modification of Three Wheeled Motorcycles

Participants obtained information about motorcycle modification through online searches, direct workshop surveys, and community networks. The modification process typically takes several weeks, with costs varying depending on added features such as

reverse gears, wheelchair mounts, and differential systems. While general maintenance and taxation costs are similar to two wheeled motorcycles, additional care is required. In daily use, most participants experienced differences in handling compared to standard motorcycles, particularly on uneven roads and in parking situations, although some reported no significant adjustment due to prior riding experience.

Use of Three Wheeled Motorcycles

Most participants had been using three wheeled motorcycles for an extended period, with several having more than a decade of experience. The adaptation period generally lasted around two weeks and involved repeated practice. Riding speed varied among participants, with some preferring lower speeds while others were able to ride at higher speeds depending on confidence and road conditions.

Public Perceptions of Three Wheeled Motorcycle Users

During daily use, participants often received positive responses from people around them, including empathy, assistance, and access to wider parking spaces. Some participants reported supportive treatment from traffic officers and encouragement from the public. However, negative experiences were also reported, such as being ignored by other riders, deliberately hit, or verbally criticized due to the vehicle modification. Family responses varied, ranging from initial resistance to full support. Despite these experiences, participants offered recommendations, suggesting three wheeled motorcycles for older adults due to ease of use, while others believed they were more suitable specifically for persons with disabilities due to higher costs.

Independence

Three wheeled motorcycles significantly enhanced participants' independence by reducing reliance on others for mobility. Improved accessibility allowed participants to carry out daily activities independently and support fellow persons with disabilities. The ability to move freely also encouraged social reintegration, expanded social networks through user communities, and improved communication confidence. While confidence in traveling distances varied, the use of three wheeled motorcycles did not prevent participants from making long distance trips beyond their local areas.

Discussion

Three wheeled motorcycles represent an innovative solution designed to facilitate mobility for persons with disabilities. These motorcycles are modified with features that differ from standard motorcycles, including the relocation of control systems to the hands and the addition of extra wheels to enhance stability. Such features are particularly beneficial for individuals with lower limb impairments, as they enable safer and more comfortable riding. These modifications generate positive impacts by allowing persons with disabilities to carry out daily activities independently and engage in social interactions without relying on others.

Interview findings indicate that participants actively strive to fulfill their daily roles and responsibilities despite their physical limitations. The decision to use three wheeled motorcycles as a mobility aid reflects their efforts to adapt and maintain independence. This aligns with Suharto's concept of social functioning, which emphasizes the capacity to meet basic needs, perform social roles, and cope with life pressures. Participants demonstrated resilience by reframing their conditions positively and focusing on their

abilities rather than limitations, consistent with the perspective of Skidmore, Thackeray, and Farley, who emphasize self worth as a core element of social functioning.

Improved accessibility through three wheeled motorcycles reduces dependence on others and supports independent living. Adequate accessibility enables individuals to meet their needs safely and comfortably, reinforcing well being and autonomy, as reflected in national disability legislation and social welfare perspectives. Beyond independence, the motorcycles also promote social reintegration by enabling participation in communities and expanding social networks. Participants varied in travel confidence and distance, yet all demonstrated the ability to manage social challenges according to personal needs and aspirations, illustrating social functioning as both role fulfillment and problem solving capability.

CONCLUSION

This study concludes that the use of modified three wheeled motorcycles plays a significant role in enhancing the social functioning of persons with disabilities. The modifications applied to these motorcycles, particularly the relocation of control systems to the hands and the addition of rear wheels, provide greater stability, safety, and accessibility for users with mobility limitations. As a result, participants are able to perform daily activities independently, reduce dependence on family members or others, and regain confidence in navigating public spaces.

The findings demonstrate that three wheeled motorcycles serve not only as a means of transportation but also as an important instrument for social inclusion. Improved mobility enables users to fulfill social and economic roles, participate in community activities, and rebuild social relationships that may have been limited due to physical barriers. The ability to travel independently also encourages users to assist others within the disability community, strengthening mutual support and social solidarity.

Despite these positive outcomes, the study also highlights several challenges, including technical limitations, safety concerns, maintenance requirements, and limited access to specialized modification workshops. These constraints indicate the need for broader institutional support. Therefore, it is essential for policymakers, transportation authorities, and community stakeholders to promote inclusive mobility solutions through supportive regulations, accessible infrastructure, and public awareness initiatives. By addressing these aspects, modified three wheeled motorcycles can more effectively contribute to improving the quality of life, independence, and social participation of persons with disabilities.

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