Research Article

Measurement of Hand/Handrim Grip Forces in Two Different

either side for use by either right- or le -handed users (insert Figures and) and can include both components or only the steering mechanism. e body of work to date, comparing the NUW to existing provision, suggests that the NUW is ergonomically more e cient to drive and preferred by users in a laboratory setting [,], in their own homes [,], and in simulated activities of daily living setting]. ese studies suggested that NUW could meet the unmet needs of the hemiplegic user group and provide them with additional choice in their wheelchair provision. However, there is no research exploring grip action in di erent one arm drive wheelchairs.

Wheelchair propulsion necessitates the repetitive use of the upper limb joints and muscles which have been linked to repetitive injurt11.6m11.9-435.yej5.6(ino)16(u)-e.2(ir8-311.93p)],1(r2s)s9(a)2.d8(3i(n)5-6(ia)8.12)j0.5 -0.0007 Tc [(s)4.3(t)8.9(u5)

T : To show demographic variables of the participants.

Male	Mean	SD	Female	Mean	SD
Age (yrs)	.	.	Age (yrs)	.	.
Height (cm)		.	Height (cm)	.	.
Weight (kg)	.	.	Weight (kg)	.	.

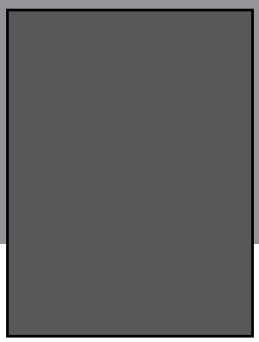
T : Descriptive log transformed data to show mean and standard deviation of force measurement (N) per region per wheelchair for each activity.

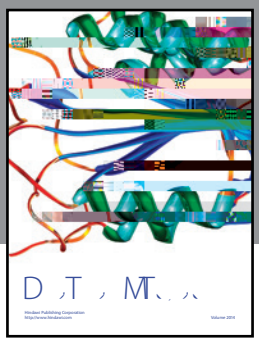
Region	Wheelchair	Straight running mean (SD)	Corners mean (SD)	Mats mean (SD)
Fingers	Action	. * (.)	. (.)	. (.)
	Neater	. (.)	. (.)	. (.)
umb	Action	. * (.)	. (.)	. (.)
	Neater	. (.)	. (.)	. (.)
Palm	Action	. (.)	. (.)	. (.)
	Neater	. (.)	. (.)	. (.)
Total	Action	* .		

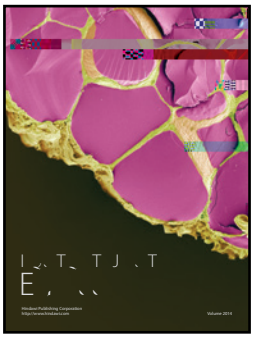
propelled. In this study the two wheelchairs were both of the same model and both had the same foot steering device attached. e only di erence between the wheelchairs was the addition of the di erential to the Neater Uni-wheelchair. e di erence in weight between the wheelchairs was negligible (. kg) which theoretically would suggest that there would be no di erence in rolling resistance. It is, however, acknowledged that rolling resistance was not measured in the study. Moreover, the velocity of wheelchair propulsion was also not controlled in this study. However, as the time taken to complete the circuits did not vary signi cantly, it could be suggested that the velocity would also not have varied. Greater control of the velocity using a treadmill would eliminate this variable from the study; however this in turn would have precluded simulation of functional use of the wheelchair.

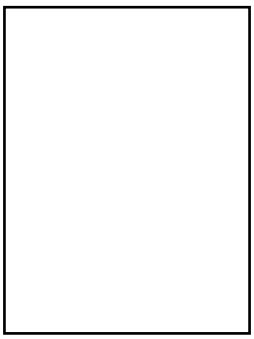
e results from the analysis of the regions of the hand also provided some interesting ndings which supported those of the total grip force analysis. e results suggested that forces generated in the ngers and thumbs were greatest in the foot steered Action wheelchair in straight running. ese ndings concur with the results reported by Medola et al. [] who showed that, when propelling a wheelchair, the hrt/9(,)3n94m15(h)-4.3oi the hrt ii30.4(t)-14.7(h)]TJ T* 0.0506 Tc [twhe d69(i.8(s)11.2(tal)1294
n70.4(he796(er)5.7(s)4234.8(w86.1(o)09.1(u)-5.9(de)4225.7i(ndcal)18.6(t58.7(e)-236.6(t)-6(h)251al)18.6(t)4225.5(a)-236.1(s)5.3(t)-6
n-e88.2(s)-0.4(ig)-9nnt(-308.1(d)26.2(i)8.4(es)11.8(ence)-308.2(in)-309.1(ha)8.4(nd/ha)8.4(n)2.62dr)70.2(ie)-307.2(f)6.1(o)09.7

pilot study,Ž









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