

Para surfing performance in athletes with lower limb amputations

A cross-sectional study



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INTRODUCTION

- Individuals with lower limb amputations are surfing competitively.
- Unknown performance ability of athletes with lower limb amputations.
- Unknown how athletes chose to surf: with or without prostheses.

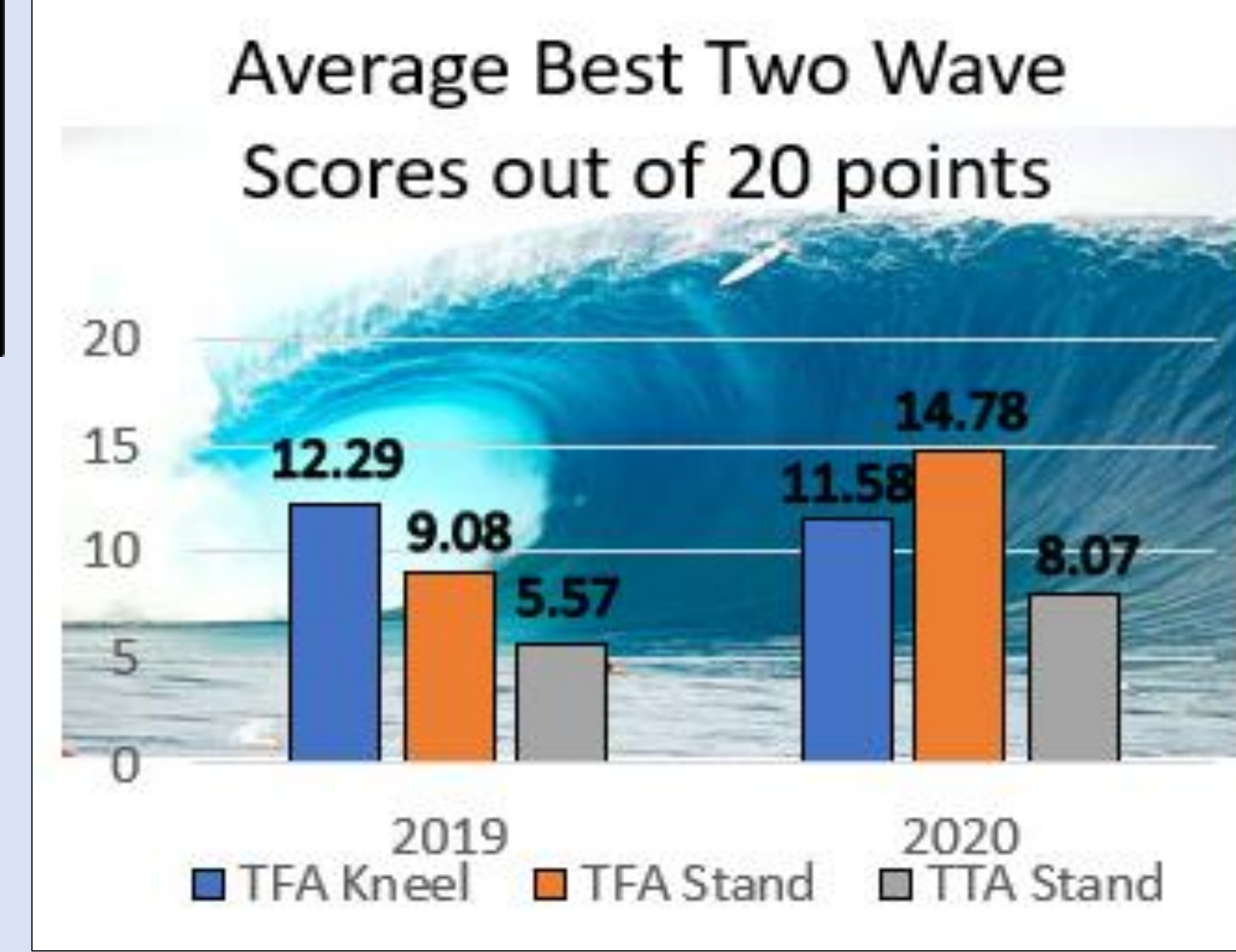
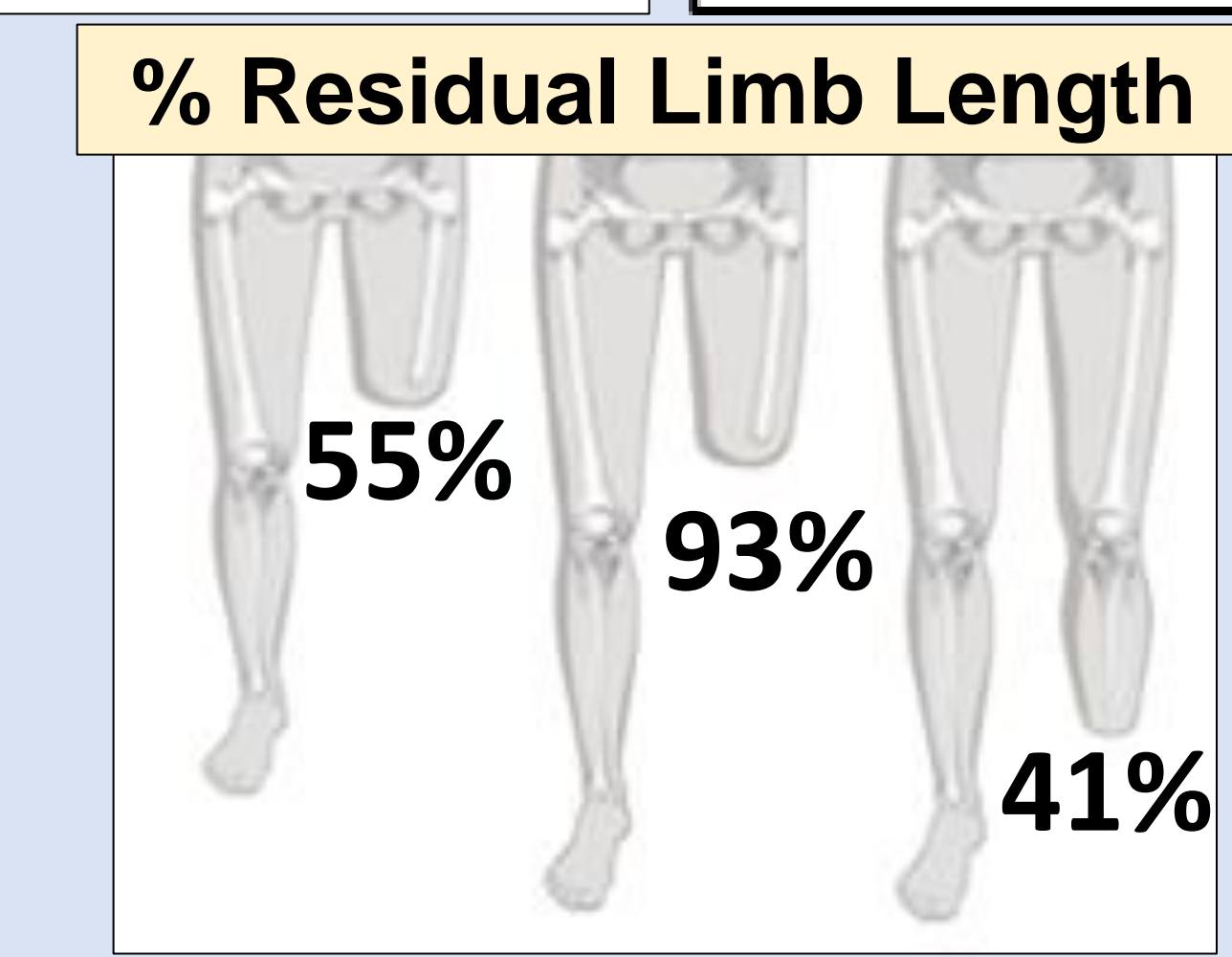
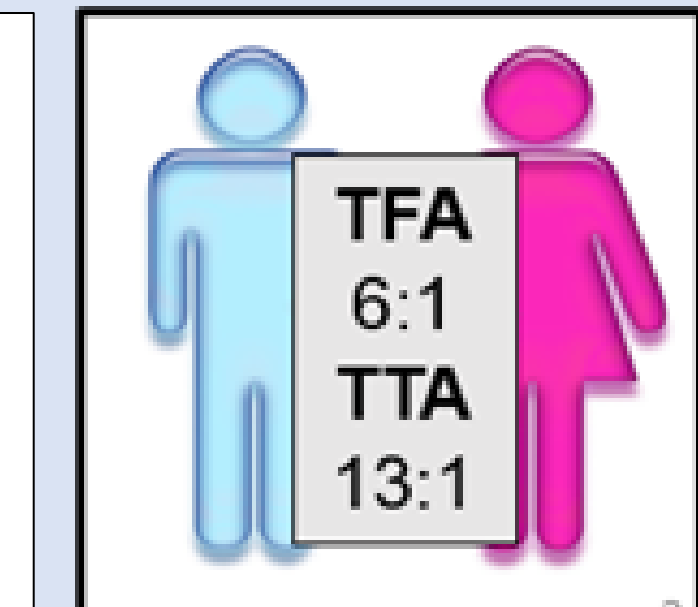
This study investigated surfing performance in athletes with transfemoral amputations (TFA) and transtibial amputations (TTA) who participated in international para surfing competitions.

METHODS

- Collected archived **data (n=20)** from classification records: demographics, residual limb lengths, surfing experiences, and judged wave scores.
- **Continuous variables:** age, residual remaining leg length (%), prior surfing experience, and duration of competing experience **analyzed using independent sample t test.**
- **Ordinal variables** surfing performance scores of 2019 and 2020 between the groups **compared using Mann Whitney 'U' test.**
- **Spearman ρ correlation coefficient** used to determine the association between the duration of prior surfing experience and duration of competition experience with the surfing scores in both groups.

RESULTS

Participants:
TFA Stand - n=3
TFA Kneel - n=3
TTA Stand - n=14



		Surfing performance 2019 Waves: faster, bigger				Surfing performance 2020 Waves: slower, smaller			
		TFA	TTA	Mann Whitney U value	P value	TFA	TTA	Mann Whitney U value	P value
Total score	n=5	n=7	4.0	.028	n=5	n=8	4.0	.019	



DISCUSSION Why did para surfers with TFA perform better than surfers with TTA?

Consideration	Results	Comments
Gender?	?	Male (n=18) Female (n=2); sample too small
Percentage of residual limb length?	No	Percentage of residual femur 55% & 93% or tibia 41% length-no influence on scores
Years of prior surfing experience & competing?	Possibly	Not significant, possible correlation between more years surfing & higher scores
Surfing position?	No	No significant difference TFA standing (n=3) versus TFA kneeling (n=3)
Prosthesis use when standing?	YES	Yes, significant difference. TFA (n=3) averaged higher wave scores of 13.06/20 points compared to TTA (n=14) with 8.52/20 points
The impact of prosthesis?	Possibly	Type and fit of a prosthesis may influence performance
Biomechanical advantage using 1 joint (hip) versus 3 joints (hip, prosthetic knee, prosthetic ankle)?	Possibly	Higher levels of femur amputations have found lower usefulness of prosthesis for surfing correlating easier biomechanics for surfing
Biomechanical advantage for popup or wave riding?	Possibly	Surfers with TFA may have a biomechanical advantage of using compensatory hip and trunk mechanisms due to limited joint ROM in the prosthesis
The impact of the surfboard shape?	Possibly	Standing surfboards are typically without modifications; kneeling surfboards are often shorter, wider, and with adapted cut-outs or grooves on top deck of surfboard

CONCLUSION

Surfers with TFA who stood or kneeled received higher wave scores than surfers with TTA who stood. Sample too small to conclude results.

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REFERENCES & CONTACT

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