Results of a Modified Front Hop Test for Decision-Guiding: Feasibility, Validity, and Reliability

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OARSI CONNECT '21 VIRTUAL WORLD CONGRESS ON OSTEOARTHRITIS APRIL 29–MAY 1, 2021 • 2021.oarsi.org

Background

- In rehabilitation settings, hop tests are applied to guide and adjust progressions in active and sporty participants.
- Accordingly, the front hop for distance constitutes one of the major physical as well as mental barriers in the rehabilitation process.
- However, patients are frequently limited due to their fears of landing on the affected leg.
- For the modified front hop (MFH) test landing is performed bilaterally to better prepare patients and to reduce their anxieties.

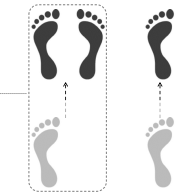

Figure 1. Examined front hop tests.

Methods

- Forty-seven active participants (age: 30 (SD 12) years; 19 females) participated 24 (SD 14, 10-79) months post-surgery.
- Tegner activity scale (TAS): males, 2-10; females, 3-9
- Participants performed a MFH and the front hop for distance (FHD, Fig. 1).
- Beginning with the uninjured side, participants performed at least two familiarization trials for each limb and test, followed by three measured and recorded trials.
- Data was normalized to participants' lower limb length (LLL).

Aim

- This study was designed to prove the feasibility, validity, and reliability of a MFH test in active participants after ACL surgery.

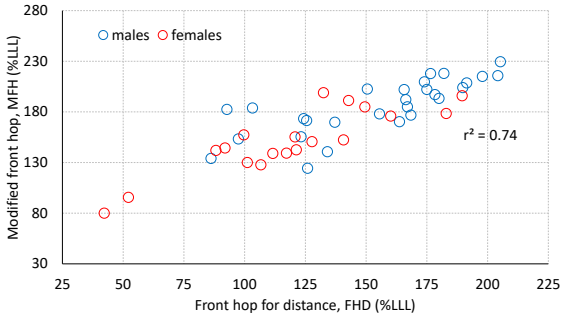

Figure 2. Relationship between the FHD and the MFH tests (injured side).

- Linear correlations of the best trials revealed strong positive associations (injured: r = 0.86, Fig. 2; uninjured: r = 0.92, p < 0.001) between the FHD and the MFH.
- Within-session ICC values were excellent (> 0.94) for both front hop tests, independent of the side examined.
- The SEM values were smaller for the MFH (injured: 5.6cm, uninjured: 5.8cm) as compared with the FHD (injured: 6.1cm, uninjured: 7.9cm).
- No association was found between participants' hop performance and TAS (ρ = -0.07, p = 0.6).

Results

- Participants felt safer and less strained with the MFH. Hence, fewer failed attempts were recorded for the MFH (28/282 trials; 10%) as compared with the FHD (78/282 trials; 28%). For detailed absolute as well as normalized results, please refer to Table 1.

Table 1. Results for the examined front hop tests as mean (SD) min-max.

	Modified front hop (MFH)		Front hop for distance (FHD)	
	injured	uninjured	injured	uninjured
Males	180 (26)	181 (25)	150 (32)	158 (24)
cm	120-218	122-219	81-195	112-197
	186 (27)	187 (27)	155 (35)	164 (26)
%LLL	124-230	128-231	86-205	119-211
Females	137 (30)	136 (36)	108 (34)	119 (33)
cm	72-187	51-192	38-163	54-167
	152 (32)	151 (38)	120 (38)	132 (36)
%LLL	80-199	57-205	42-190	59-194

Conclusion

- This data showed that the MFH was found to be a feasible, valid, and reliable tool to judge neuromuscular performance after ACL surgery.
- If the aim is to enhance safety, landing on both feet should be utilized. In contrast, patients who are free from fears to touch down with the affected leg can easily progress with single-leg landings.
- The medical staff is encouraged to use this test to guide early rehabilitation progressions and to gain additional information for the decision process.

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