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# Development of a standardized questionnaire to report mechanisms of fall-related injuries in sport climbing

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## Introduction

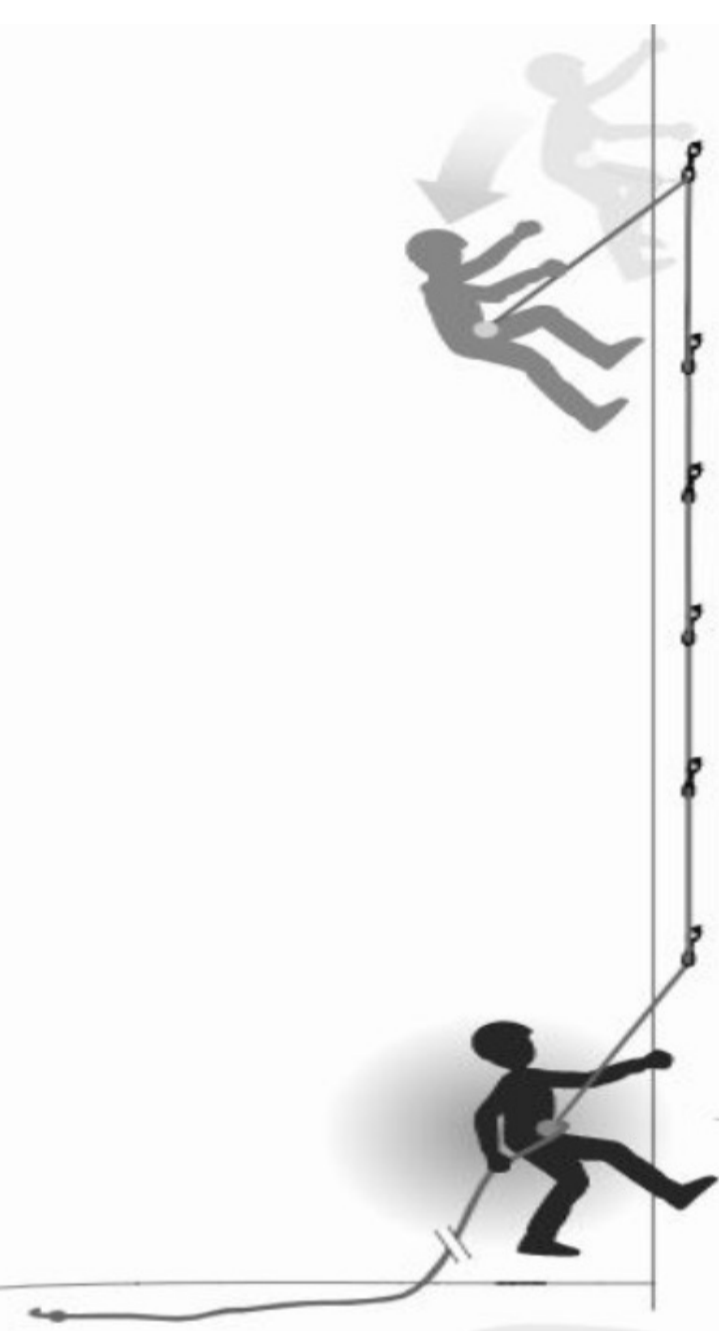


Image 1 : climber adopting the recommended position during a fall

Sport climbing is rapidly growing in popularity. While falls are frequent and mostly harmless given the recommended positioning during a fall (Image 1), the most severe injuries in sport climbing are caused by a fall<sup>1</sup>. However, the fall mechanisms leading to fall-related injury (FRI) in sport climbing are under studied. No standardized tool exists to report them. **The purpose of this study is to develop a standardized self-report tool of fall mechanisms.**

## Method (1): Participants, material & analyses

**Participants:** 107 sport climbers attending a sport climbing gym (mean age  $31 \pm 14$ ), 60% men.

**Material:** A total of 40 fall mechanisms were compiled from a previous empirical study<sup>(2)</sup> and composed both an observational tool and a self-administered questionnaire. Fall mechanisms were divided into three fall temporalities dimensions: 1) the reasons that lead to the fall (fall reason, n=12); 2) the climber's or belayer's behaviors during the fall (fall behaviors; n=20); 3) the details concerning the end of the fall (End; n=9).

## Method (2): Procedure and analyses

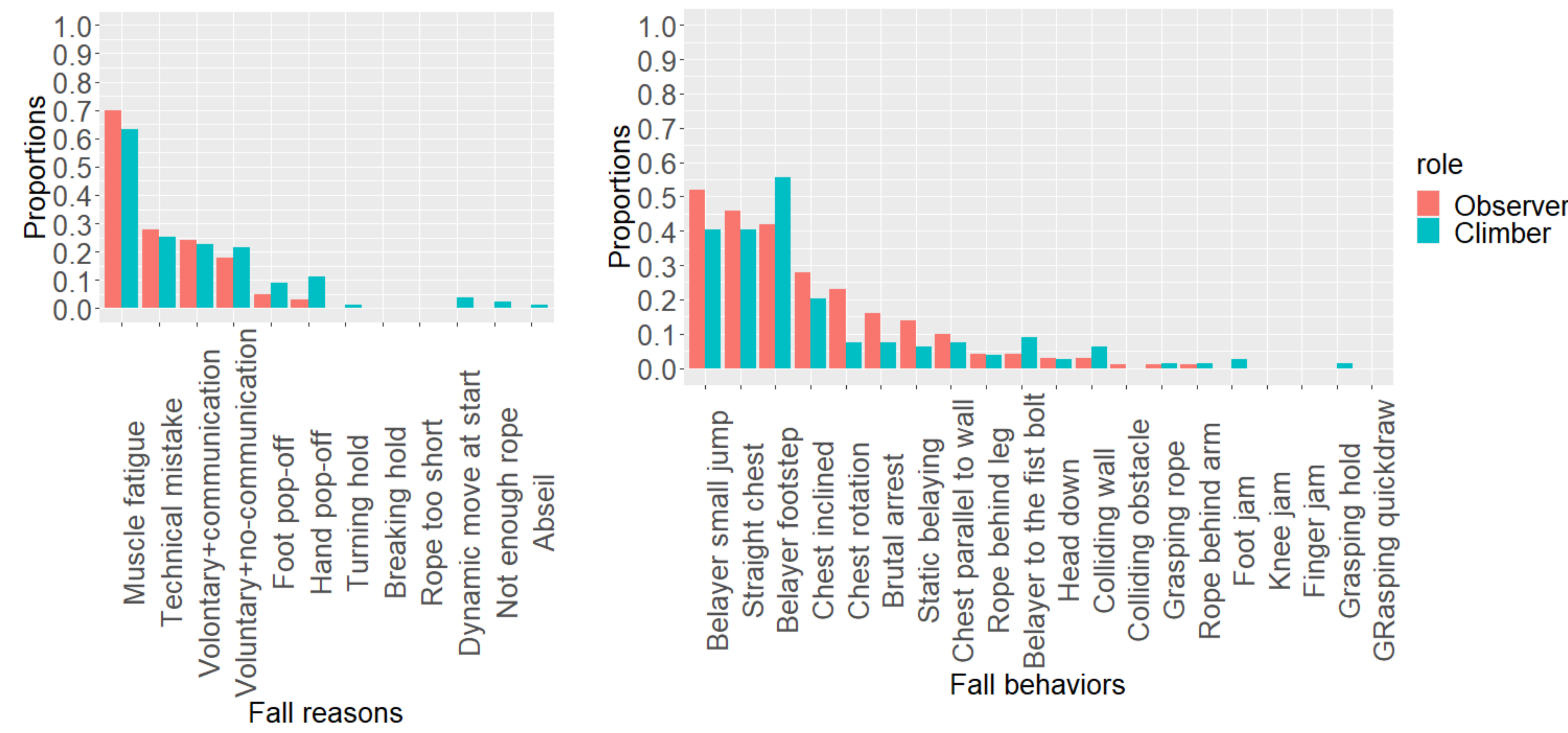
**Step 1:** Observation of climbers who may fall

**Step 2:** Analysis of the fall by the observer using his observation grid

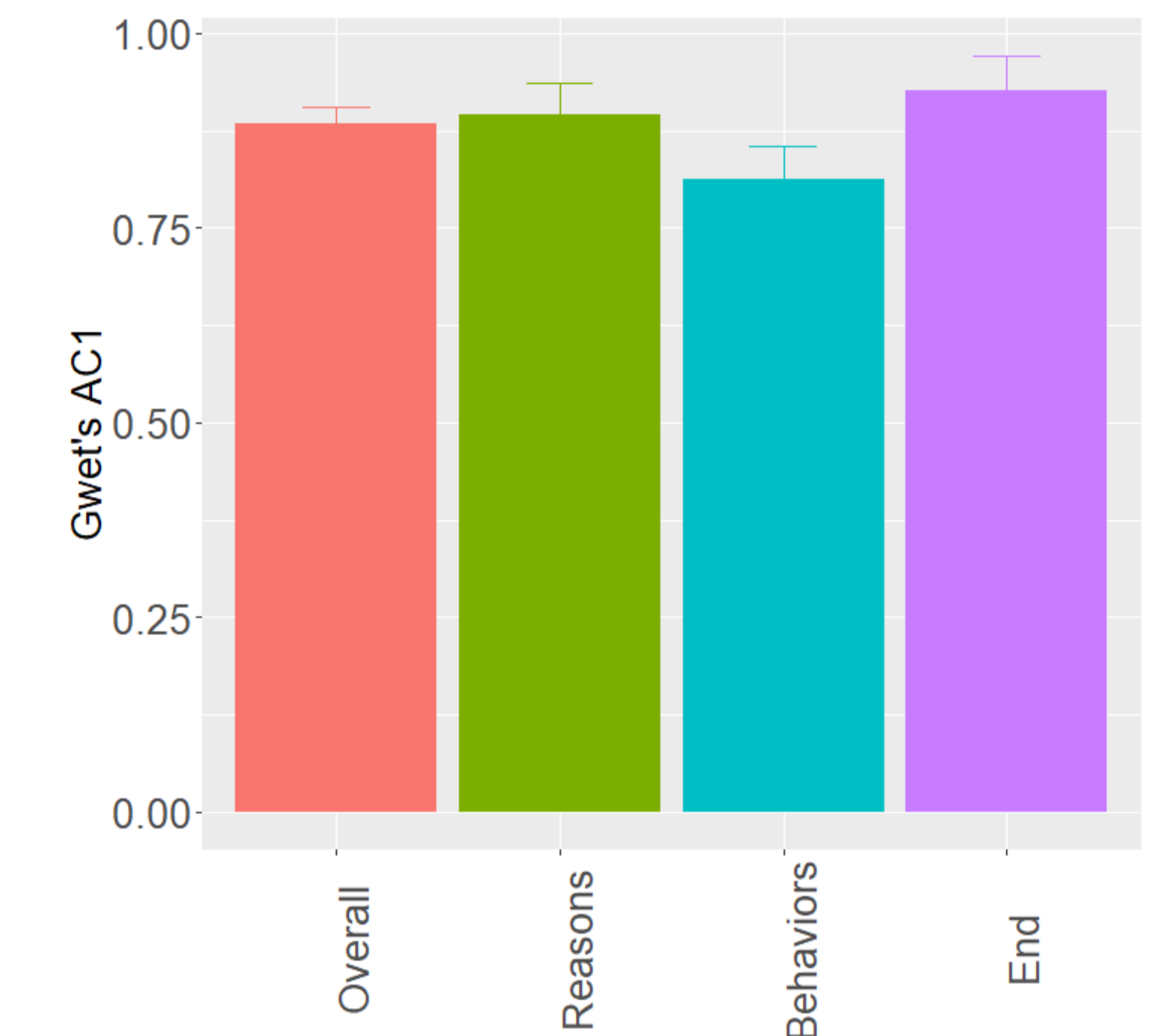
**Step 3:** Analysis of the fall by the climber and the belayer using the self-reporting questionnaire

**Analyses:** Use of Gwet's AC1<sup>(3)</sup> to measure the degree of agreement between the climber and the observer. AC1 was interpreted as<sup>(4)</sup>: *Very good* > 0.8; *Good* between 0.6 and 0.8.

## Results (1): Frequency of fall reasons and fall behaviors (fall number = 79)



## Results (2): Degree of agreement between the climber and the observer



## Conclusion & perspective

- The degree of agreement between the fall mechanisms reported by the observer and the climber is good even very good (Gwet's coefficient > 0.77).
- The self-report tool of fall mechanisms can be used in the event of a fall-related injury, to measure the contribution of each mechanism to the occurrence of a fall leading to injury.