

## ORIGINAL ARTICLE

# VALIDITY TEST FOR SIMPLE ERGONOMICS RISK ASSESSMENT (SERA) METHOD

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### ABSTRACT

Validity test is important during the development of ergonomics measurement. Failure to conduct validity tests will result in the measurement method being developed to be incapable of providing reliable ergonomics measurements. The objective of this study is to conduct validity test on the simple method ergonomics measurement which was developed. The method named Simple Ergonomics Risks Assessment (SERA). Content validity test and criterion validity test were conducted. The content validity test consists of 6 ergonomics experts who actively provide inputs and positive feedbacks to improve the measurement method being developed. Meanwhile, the criterion validity test involves data collection of complaints on body parts among oil palm workers which were derived from Nordic Musculoskeletal Questionnaire (NMQ) and ergonomics risk assessment scores obtained from SERA. Both findings were tested with the Chi-square test to explore possible relations between the two findings. Results from the test conducted showed that there are significant relations in the scores of neck posture; hip, right and left shoulder, right and left wrists and the right hand associated with fresh fruit bunch (FFB) harvesting activities. In the loose fruits collection, the Chi-square test showed significant relations in the scores of neck posture, hip, right and left shoulders, right wrist, right arm and the left hand. However, there are body parts such as the legs which showed no significant relation. More tests should be conducted to further explore the validity of the method being developed. Findings from both validity tests show that SERA were verified by the experts and tested with validated method so that it is valid to be applied in the future.

**Keywords:** Ergonomics measurement method, pen and paper based, content validity test, criteria validity test

### INTRODUCTION

Psychometric properties assessment on the ergonomics measurement method being developed is important to validate the measurement tools to ensure it can be used in ergonomics risk management. Ergonomics measurement method with good psychometric properties value indicates that it was properly developed and tested so that it can be widely used by researchers<sup>1</sup>. That is why, the issue of reliability and validity in the development of ergonomics measurement methods received considerable attention for the past decade<sup>2</sup>. This is particularly so in the development of pen and paper based ergonomics measurement method as both the reliability and validity testing are mandatory especially in exploring the relationship between ergonomics risk factors and the health effects particularly those involving musculoskeletal disorders (MSDs)<sup>3,4,5,6,7</sup>. Failure to do so, will lead to inconsistent and inaccurate measurements.

During the initial development stage of SERA method, a thorough literature studies was conducted. Literature studies on ergonomics risk factors in the plantation sector were carried out<sup>8</sup>. Previously developed ergonomics measurement methods having the same objectives with SERA were explored and thoroughly analysed<sup>9</sup>. Additionally, the researchers also discussed with focus group

members who are researchers in ergonomics fields from three local universities to determine relevant ergonomics risk factors in SERA. Focus group meetings were also held in previous researches<sup>10,11</sup>. Target population were interviewed by the researchers on several occasions<sup>12,13</sup> to gain important inputs in developing the conceptual model for the SERA method. This technique is also suggested by Giesler et al.<sup>14</sup>.

Validity is an important psychometric property in assessing a measurement method being developed<sup>1</sup>. Validity test is crucial in ensuring the method is capable of measuring what it sets out to measure<sup>15</sup>. There are several types of validity test such as content validity and criterion validity.

### Content Validity

A content validity assessment is important in the process of developing a new ergonomics measurement method<sup>1</sup>. There are two approaches used to test content validity<sup>16</sup>. They are: (1) Assessment through face validity and (2) Assessment through experts' assessment. In a previous study by Lafave et al.<sup>17</sup>, they conducted content validity test with the involvement of experts committee. The experts committee should consist of 5 to 10 experts<sup>18,19</sup>. Assessment of content validity of a measurement method being developed can also be carried out