APPLICATION OF PARTICIPATORY ERGONOMICS TO REMIND WELL-BEING TRADITIONAL FABRIC WEAVERS IN BADUY

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ABSTRACT

Traditional Baduy cloth weavers play a crucial role in maintaining local culture and traditions. However, their unergonomic workplace often leads to physical and health problems. The purpose of this study is to improve the health of traditional Baduy fabric weavers by applying the idea of participatory ergonomics, which involves weavers directly in the process of finding ergonomic problems and making appropriate solutions. To investigate traditional fabric weavers, direct observation, in-depth interviews, and directed group discussions are used. Furthermore, the data obtained was analyzed to identify components that contribute to health and wellness problems. Based on the results of the analysis, various ergonomic solutions are designed and implemented. This is by changing/adjusting the working position, and providing instructions on how to work safely and efficiently. As a result, the risk at level 5 (high) can be lowered to level 3 (low). Research on the application of participatory ergonomics is expected to significantly improve the health of Baduy traditional fabric weavers. This study emphasizes the importance of a participatory approach in creating ergonomic solutions that suit local needs and conditions. It also shows that this method can be applied to other traditional communities to improve cultural well-being and sustainability.

Keywords: *Baduy, Ergonomy, Traditional, Participatory.*

INTRODUCTION

The activity of cloth weaving work in the Baduy tribe is quite famous, so it is familiar to the general public. If we enter the Baduy area, you can hear the sound of looms chattering with each other from the top or bottom of the hill, thus adding to the original atmosphere of the Baduy tribe. The weaving work still uses human labor in doing its work. The potential hazards that arise in weaving work are the potential hazards of ergonomics. Ergonomics is the science of adjusting all forms of facilities used in activities or in completing work with a person's limitations and abilities (Hudriah et al., 2023). Potential ergonomic hazards can arise as a result of inappropriate working methods or working positions or postures when performing a job.

In the weaving-weaving work system, the most common thing is musculoskeletal pain complaints.

Musculoskeletal pain complaints are the most common complaints experienced in workers worldwide (Agistha Novta Auliya et al., 2021).

This research aims to avoid the occurrence of potential dangers that can arise and provide recommendations if there are weavers in the Baduy tribe who experience complaints due to the work they do. The research can be carried out by evaluating the procedures of weavers in the Baduy tribe during their work, where in the calculation it will be known how many workers experience complaints due to potential ergonomic hazards. So that with the results obtained, a re-evaluation can be carried out related to the cause that can cause the pain complaint by assessing every movement made while working using the Reba calculation. By using REBA calculations, it will be possible to find out which values for each position or posture are wrong and can cause potential ergonomic hazards.

THEORETICAL STUDIES

Rapid Entire Body Assessment (REBA) is a systematic method in the field of ergonomics that is used to evaluate all postures of workers related to job tasks to identify MSDs and other work-related risks (Middlesworth, 2014). REBA was first introduced by Hignett and McAtamney (Hignett & McAtamney, 2000). REBA assesses the working position of the neck, back, arms, wrists, and legs (Musyarofah et al., 2019).

The method used by the researcher in this study is the quantitative method. By collecting interview data and surveys of complaints of skeletal muscle disorders. The first stage carried out for the research is to provide skeletal muscle disorders complaints to the research object. This survey aims to help researchers identify complaints felt by research objects. The second stage is that the existing data is collected and processed using the REBA method by the researcher in order to achieve the objectives of this research. (Hidayat & Mahbubah, 2022)

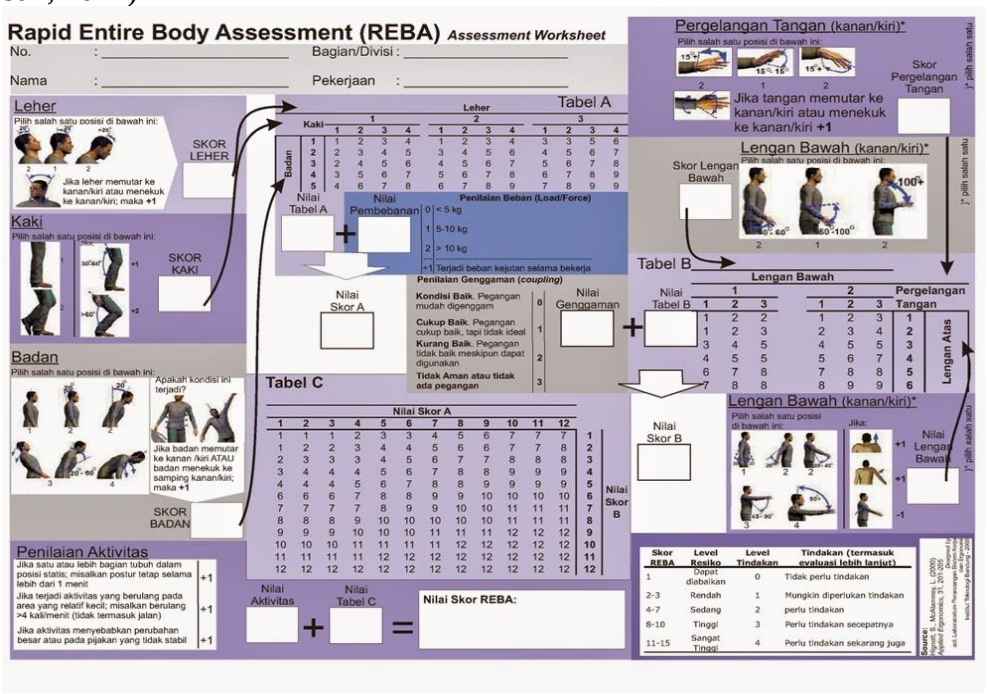

Figure 1. REBA Theory Picture

METHODOLOGY

The survey was carried out by conducting a direct discussion with Baduy fabric weavers at the location of Baduy village. From the results of the discussion, information was obtained that during work there was a feeling of discomfort in the back and the duration of the work obtained could not be long. Thus, a lot of rest time is needed and the results of

work are not much because weavers often take breaks to recover their bodies. The survey/interview was conducted from June 15 to June 20, 2024, and the results can be seen in Table 1 below:

Table 1. Results of an interview with Baduy weavers (June 15-20, 2024).

No.	Name	Trunk Problem	Wrise Problem
1.	Dewi	Yes	
2.	Ulfah	Yes	
3.	Siti	yes	
4.	Rini		yes
5.	Neni	yes	
6.	Tini	yes	
7.	Yuli		yes
8.	Lastri	yes	
9.	Mita	yes	

From the table above, it can be seen that the most common back pain problem is experienced by fabric weavers in Baduy, namely 7 people out of 9 respondents.

From the complaints given, pictures were taken of the position of the weaver's posture and limbs while working. From this picture, an assessment of the angles that exist in the posture during work on the back, neck and arms area is then carried out and the results are as shown in the picture below.

Figure 2. Image of the posture position of the Baduy weaver.

From the pictures of the current conditions, it can be seen that Baduy weavers work in a sitting position with their legs on the slender. From this position, the angles of the posture according to the REBA method are obtained as follows:

Upper arm : 88o
Forearm : 45o
Wrist : 45o
Neck : 19o
Punggung : 45o

RESULT AND DISCUSSION

From the existing condition data, the following REBA angles have been obtained :

Upper arm : 88o
Forearm : 45o.
Wrist : 45o

Neck : 19o
Punggung : 45o

Furthermore, the position of these angles can be calculated by entering them into the REBA tables, as follows:

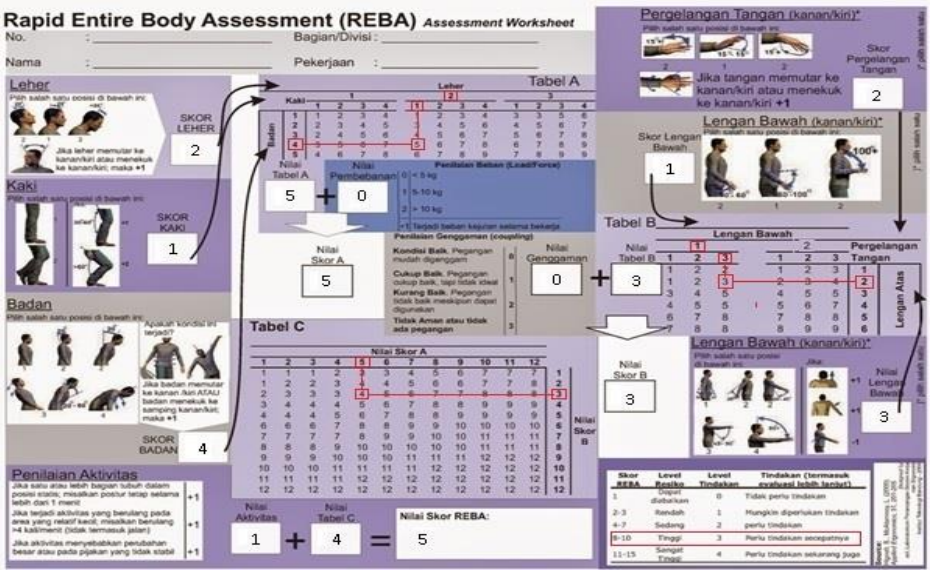

Figure 3. REBA calculation results

After calculations using the REBA method, it was obtained that the risk level was 5 or High. When viewed from the level of action, the action that must be taken is action/handling as soon as possible so that this risk can be overcome immediately.

Repair steps :

Based on the results of the REBA calculation of the current posture of the weaver, which is at the Score of 5 (High) and the Action Level that must be taken as soon as possible, then countermeasures are immediately taken to improve the current situation. The steps taken are as follows:

1) The body position of the Baduy cloth weaver sits in an upright position/leaning against the wall with the ganjal that has been given. The sitting position needs to be considered in order to form the angle of the back into the ideal position (see fig. 4)
2) The position of the loom with the weaver is given the right distance (not too far) from the reach of the left and right hands.

Figure 4. REBA corners that have been repaired.

From the condition data that has been repaired, the following REBA angles are obtained:

Upper arm : 45o
Forearm : 45o.
Wrist : 45o
Neck : 18o
Punggung : 0o

Furthermore, the position of these angles can be calculated by entering them into the REBA tables, as follows:

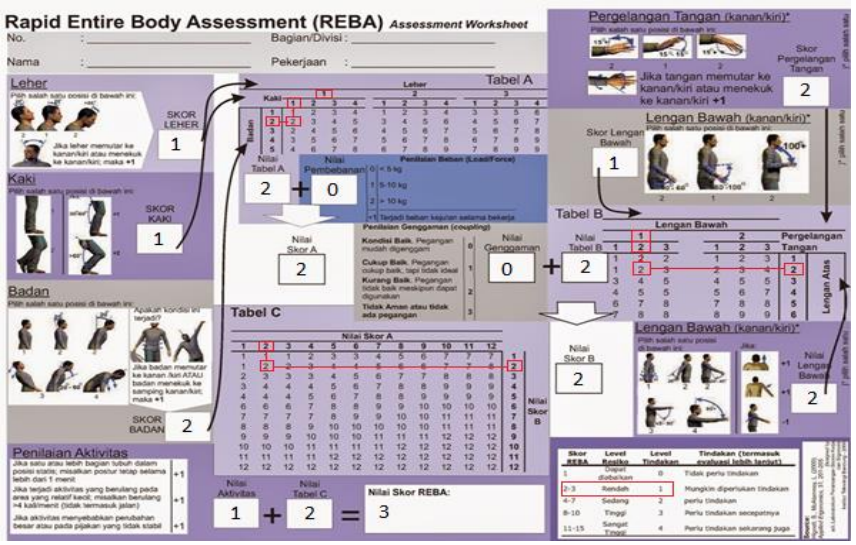

Figure 5. Drawing of REBA's calculation after the position is improved.

From the REBA calculation in figure 5, it can be seen that the REBA value is at the number 3 and with a risk level of 1 (Low). This can be necessary to counteract unlike the initial position of the REBA value is at 5 with a Risk level of 5 (High), which is very necessary to take corrective action (see Figure 3).

CONCLUSION

After carrying out all the stages of research starting from data collection, data processing, data analysis, presentation of research results and discussion of body position before and after improvement with the REBA method, it can be concluded that:

Back pain in Baduy fabric weavers according to the analysis of REBA angles can be overcome/prevented byreducing the back angle to below 45o in the following way:

1) Work risk can be lowered by changing the position of the body at work.
2) It is hoped that with a low risk level, complaints of back pain in Baduy fabric weavers can be resolved.
3) Weavers with an upright back position are healthier and more productive at work.

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