Ergonomic Analysis of Work in a Marine Mollusc Farm in Southern Brazil

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The cultivation of marine molluscs stands out as a highly productive aquaculture activity, generating jobs and income. In Brazil, the activity comprises of the cultivation of *Perna perna* mussels, *Crassostrea gigas* oysters and *Nodipecten nodosus* scallops, with national production predominantly being carried out in Santa Catarina State (EPAGRI, 2014).

However, in spite of the increase in production little is known about the risks present in the working environment and their impacts on the activity. As such, the objective of this study was to identify the risks present in the working environment on a marine mollusc farm with the intention of discovering and analysing the facilities and difficulties found in the execution of tasks.

The ergonomic analysis of the survey was carried out in accordance with the proposal of Guérin and collaborators (2001). Socio-demographic questionnaires and interviews were used as instruments of general data collection (da SILVA, 2012). The Nordic Questionnaire was applied for the verification of musculoskeletal symptoms (CORLETT and BISHOP, 1976).

The marine farm is located at Ponta do Sambaqui beach (27°29’18”N and 48°32’12”L), Florianopolis, Brazil, and produces oysters and mussels. The physical structure consists of a kitchen, a bathroom, a room for washing and storing milt sieves, a depositary, a changing room, a tool room and a small laboratory with a microscope, magnifying glasses and reagents (Figure 01).

![Figure 01: Marine farm. Source: The authors](image)

The tasks are carried out by two workers (A and B). Worker A is 51 years old and has incomplete elementary education. Worker B is 27 years old and has a college degree. The working day is 8 hours daily, starting at 8 in the morning and finishing at 5pm. The activities carried out on a daily basis consist of going out to sea at the beginning of the day, cleaning the animals, removing incrustation and parasites from the shells, separating animals by size and putting the animals in new lanterns or ropes that will go out to sea.
Neither of the workers said that they had received training about their role or health and safety measures. There is no formal prescription of tasks, thus cognitive mobilisation is required for the interpretation of situations and decision making.

The trip out to sea is carried out using a motorised vessel without a winch. Thus, the handling of cultivating structures is carried out manually. The workers do not use life vests, hats or sun cream, but they use rubber overalls, aprons, gloves and rubber boots. The personal protective equipment that is available consists of cotton gloves, PVC boots, rubbered overalls, plastic aprons and rubber raincoats.

The cleaning and classification of the animals are carried out with the support of a high pressure washer and a cleaver. The procedure is performed on a wooden table in an outdoor area, on the sand. There is no specific mollusc washing machine and no chair or bench for the workers to carry out the task sitting down. There is no kind of cover in this area, meaning that on days when it rains the workers carry out the activity wearing rain coats.

Among the main risks identified in the working environment the most notable are: cuts from both oysters and from cleavers; falls, caused by the mollusc shells and incrustations deposited on the floor; drowning due to lack of life vest, musculoskeletal disturbances due to various inadequate postures and heavy lifting such as that of the cultivation structures, risk of sunstroke and skin problems due to the lack of suncream and hats. Both workers in the study complained of pain, especially in the lumbar region, hands, wrists and fingers.

Another risk that was identified was that of electric shock from the use of equipment such as the high pressure washer and cutting machines and the maintenance of equipment in the tool room. According to the worker who has worked for a longer time on the farm, shocks are frequent, as are cuts.

Aspects related to the working environment deserve to be developed in the sector, as the search for professionalisation has been one of the characteristics of the sector. As such, the development of research to discover critical points in the productive process are more and more relevant for the development of action plans that can improve the activity from an occupational point of view.

**Keywords:** cultivation of marine molluscs, ergonomics

**References**


