

Principles that organize the movement when handling loads: for understanding the techniques used by handlers in real situations

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Abstract

Purposes

Our studies show that handlers, especially the more experienced ones, use various handling techniques to adapt to the context. However, no tool can appropriately describe these techniques so that they can be better understood. The aim of the study was, using the concept of rule of action, to see whether it is possible to identify invariant principles that organize the movement of handlers when handling loads.

Methods

Rules of action in handling have emerged from the relationship between techniques identified by applied research focused on the analysis of the activity of different populations of handlers operating in different contexts and experimental laboratory (n = 105). A second level analytical process on the results allowed us to take the techniques described in specific contexts – and whose purpose was similar – and to associate them with a rule of action.

Results

Eight rules of action were identified (Table 1). Together, these rules are used to describe the techniques used by handlers. These rules do not specify how to do the handling – as would a procedure – but rather present a goal that should be achieved. These rules underly the logic of the movement produced. Depending on the situation, some rules cannot apply, while others will be given priority, and they may ultimately become contradictory. Rules of action are therefore related to each other: in the performance of the activity, judgement is necessary to interpret and link them.

Conclusions

Action rules, true organizing principles for movement, are a great tool for understanding handling activities. They help explain the action and become a medium for communication – whether between colleagues or for interacting with a preventionist or trainer – by facilitating mutual understanding. They become the code of the sign alphabet of handlers, common benchmarks. This is one of the great advantages of giving precedence to rules over techniques. An action is associated with an intention through a rule that allows this interpretation: a rule requires thinking in terms of a goal. Fewer elements are dealt with since several techniques can be reduced to a single rule of action. The result is a broader power of generalization, even allowing comparisons between different tasks, or various activity sectors, a current deficiency in research.

Keyword : Handling methods, MSD, Training, Observation

Table 1 Eight rules of action in handling

Principle	Note	Description
1 Postural alignment	The human spine is designed and adapted for working in alignment.	Refers to the best spinal postures to adopt during effort. It is important to respect the natural curvature of the spine, without excessive forward bending, and to work symmetrically.
2 Load/body distance	Greater distance from the load means greater effort.	The lower back is already subjected to considerable effort to support the upper body; now a load is added, and the farther it is from the person holding it, the greater its weight. The load should therefore be held as close to the body as possible.
3 Weight bearing	The less time is spent holding the load, the less the effort.	The phase in which the load is entirely supported is the most demanding: this should be reduced to a minimum.
4 Load use	The load can be used to work in one's favour.	It is preferable to work WITH the load rather than against it, using its position in space or its inherent properties.
5 Body balance	Being in balance and ready to react to avoid unpleasant surprises.	The addition of an external load influences balance, as does the floor surface. Having to recover from loss of balance or from an unforeseen event requires sudden and brusque movements, which are unnecessary and harmful and should be avoided.
6 Body use	The body can be used to reduce effort.	The body can be used in handling activities. Body use consists first and foremost in the use of the lower limbs, which do most of the work.
7 Transfer from pickup to delivery	The handler must choose how to cover the space between pickup and delivery.	The route selected for going from pickup to delivery has a major influence on how long the load has to be supported. The most appropriate form of transfer must be selected.
8 Rhythm of movement	Pattern and quality of movement.	Speed and fluidity have an impact on back stress and on how long the load must be supported. The handler must know how to choose the appropriate rhythm and avoid jerky movements.