

UNDERSTANDING STATIC MUSCULAR CONTRACTIONS AND BODILY MOVEMENTS

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ABSTRACT

The human body is able to move, because it has a widely distributed system of muscles, which together make up approximately 40 percent of the total body weight. The most important characteristic of a muscle is its ability to contract. Contraction is the means by which an internal expenditure of energy produces externally visible and measurable work. However, the muscles themselves are constrained by the limits of their strength and their ability to maintain that strength. When discussing any of these factors, a clear distinction must be made between the type of work which the muscle is called on to do, which is between static and dynamic work. During dynamic activity, the muscles contract and relax rhythmically. During the static activity, a muscle remains in a particular state of contraction for a long period, and so gives little external sign of doing useful work. During static contractions, the muscle is starved of oxygen, and waste products accumulate as oxygen-independent metabolic processes take place. Discomfort and fatigue occur rapidly during static contractions for this reason. Muscles can perform well-organized dynamic work easily, but they fatigue quickly in static efforts. Therefore avoiding static efforts, including standing or sitting still over long periods of time, is recommended. The present paper aims to explain the concept of static muscular contraction, its physiology, impact on work efficiency and ergonomically feasible solutions through review of existing literature.

KEYWORDS: Dynamic Work, Ergonomics, Muscles, Muscular Contraction, Physiology, Static Work, Work Efficiency