

A STUDY OF EFFECTS OF PRELIMINARY EXERCISE AND PROCEDURES
ON PERFORMANCE IN VARIOUS TYPES OF ACTIVITIES

by 1264

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INTRODUCTION

In the academic field of physical education and the actual performance of physical activities for competitive games, whether the activities are individual oriented or group oriented, there exists a common practice that is being continued based on a minimum amount of scientific research. The practice is that of using a preliminary exercise or procedure before the actual activity is to begin. This activity is most commonly called "the warm-up".

The concept that a warm-up period is necessary to achieve the best possible performance is held by a majority of ex-athletes who are now professional and amateur coaches. This traditional practice has been passed from generation to generation of coaches. Most coaches support the practice so student after student follow these practices. In the future, their students will probably concur with the tradition until significant research is provided to prove otherwise or to modify the practice.

However, with the relatively recent increase of the science of research into physical education, the concept for the necessity of the warm-up is beginning to be more closely scrutinized. Physiologists are beginning to inspect the physiological changes that occur as a result of warm-up activities.

Since the temperature of the muscle is the key to performance efficiency it has been generally thought that by "pre-heating" the muscle, or groups of muscles, by some activity it

would result in a greater efficiency of muscle use or work load. In other words, if the time between the beginning of an activity and the beginning of maximum work load could be eliminated or reduced it would result in a better performance.¹ For example, if it took three seconds to raise the temperature of the muscle to an efficient work load then it would seem beneficial to raise the temperature before the actual performance, thus beginning the performance at a level above the "cold" starting level and therefore resulting in better performances. "Muscle contraction efficiency depends on the degree of temperature within the muscle. In the human being, the lowering of the muscle temperature below normal decreases muscle irritability and work capacity. The reverse is also true. During physical activity the muscle temperature rises. These two physiological observations put together have led to the practice of indiscriminate warming-up before athletic contests."²

Recent studies, published in the late 50's and early 60's, along with some conducted in the mid 40's, have begun to refute this traditional concept of the validity of the warm-up. However, one should not dismiss the validity of warm-up on the conclusions of the few studies that have been conducted and published. The problem is too complex to say either that warm-up is necessary to efficient performance or that it is not. Doctor Peter V. Karpovich admits that the "job of summarizing the available results of warm-up studies will leave the researcher sitting on the