

# ANALYSIS OF MUSCLE ACTIVITY IN VOLLEY SHOTS OF TENNIS ATHLETES: A KINEMATIC AND ELECTROMYOGRAPHIC STUDY

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## ABSTRACT

Forearm muscles play an important role in tennis volley hitting ability as these muscles are responsible for generating the speed and power of the stroke [2,3,4,5,6]. Surface electromyographic (sEMG) analysis of arm muscle activity in the tennis volley stroke is essential to improve understanding of the mechanics of the volley movement, as well as providing useful information to improve volley technique and protect athletes from muscle injury.

Previous studies that have been conducted have helped improve the understanding of arm muscle activity during volleys. However, there are still many aspects that need further research, such as the influence of volley force, arm muscle strength and flexibility, and movement variation on arm muscle activity.

arm muscle activity. Based on previous research, it shows that there is a lack of research that considers factors that affect volleys, such as ball speed, the volley technique used, and body position. volley technique used, and body and foot position and there are still differences in research results between one study and another. between one study and another, which may be due to differences in the methods and tools used, as well as differences in the characteristics of the players. and tools used, as well as differences in the characteristics of the research sample, so that, further research is needed by involving the analysis of EM activity.

Further research is needed involving the analysis of EMG activity in the muscles involved in the movement of tennis volley shots. The purpose of this study was to determine the activity of arm muscles in volley shots of tennis athletes.

The urgency of this research is included in the focus areas and topics of superior university research listed in the Research Strategic Plan of Yogyakarta State University in 2021-2025 with the focus areas of research, namely Non-Education and Research Topics.

research focus, namely Non-Education and Sports and Health topics, especially sports coaching education.

This research is a quantitative descriptive research. This research uses surface electromyographic (sEMG) as an instrument to determine muscle strength during a tennis stroke.

This research is considered fundamental, this will be an indicator of the Technology Readiness Level (TKT) in this research at Level 2. The output of this research is an article submitted to the Scopus Q4 indexed journal with additional output in the form of an article submitted to the international seminar proceedings.

Kata Kunci: *surface electromyographic (sEMG), tennis, volley*