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ROUND TABLE DISCUSSION II. MOVEMENT MEASUREMENT

CHAIRMAN: M.KLJAJIĆ

Topics:

1. The relevance of measurement for description of body motion in space - Speaker: M. Kljajić.
2. Precision, accuracy of measuring instrumentation - Speaker: B. Andrews.
3. Intelligent movement measuring devices:
   Part 1 video converter with real-time marker processor
   Part 2 position-sensitive photocell with multi-frequency synchronous detector - Speaker: E.H. Furnee.
4. Technical requirements of measuring system with respect to rehabilitation process - Speaker: B. Cllasson.
5. Measurement and gait synthesis - Speakers: A. Kralj, U. Stanič.

Summary

Measurements are as old as civilization. The same could be stated for the rehabilitation too. However, at this round table probably we all agree that there has never been question if the measurements are needed or not.

There is also no question which variables should be measured and what-for. The movement of human body through the space as function of time implies which variables hould be measured. But complexity of the motion: over 30 degree of freedom make the measuring task very difficult and expensive regarding the rehabilitation goal.

That is the main reason we have to simplify the measuring model of the human motion and measure what one can and not what would be necessary. But frequently we forget that fact, and we think that what we measure routinely is sufficient.

Measurements in our field are always in the function of rehabilitation. Which parameters are to be measured depends on the research goal, rehabilitation knowledge, and the measuring equipment available. It can be stated that knowledge about some process is proportional to the quality of measuring technics and its compexity. Without good measurement progress rehabilitation would be limited.

During discussion next problems were pointed out:

1. There is a particular need for movement measurement in rehabilitation for the following reasons: for the improvement of basic knowledge of biomechanics, for gait analysis nad synthesis, and for the evaluation of the rehabilitation process.
2. Recently, a considerable effort was done to introduce 3D contactless measuring systems (television, cinecamera, optoelectronic devices) into clinics.
3. There is still a big gap between the achievements in the measuring technology and clinical needs for gait measurements.
4. This gap could be overcome by interdisciplinary team work, where a team should be consisted of: medical people, biomedical engineers and measuring experts.
5. The measuring methodology has to be based on a systems approach. That means: measurement of a part of body with respect to the shole body motion, in specific environment, performing different tasks. The improvements of the movement achieved due to the application of different rehabilitation proceduress are then quantified by selected criteria.

The requirements that the instrumentation has to fulfil are: precision, accuracy should not disturb the gait of measured subjects, to enable 3D transient and stationary motion in an acceptable time and afordable price.