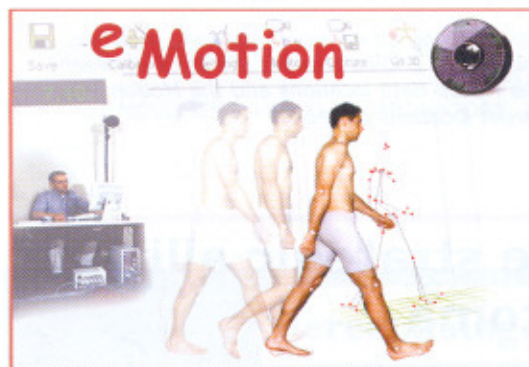
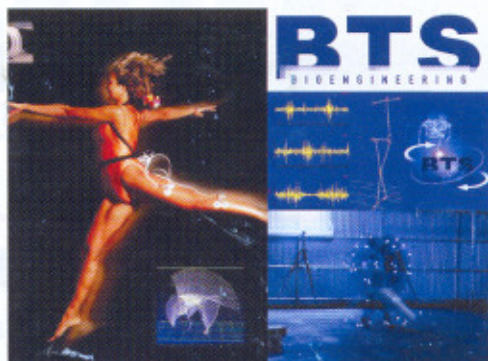


Motion News

N°2 - OCTOBER 2002
"CLINIC"



Smart, by eMotion Srl



Elite, by BTS Spa

eMotion/BTS announce strategic exclusive partnership with Mechanical Dynamics

Padova, September 30, 2002

eMotion/BTS and Mechanical Dynamics (now MSCSoftware), developer of ADAMS®, the world's most widely used mechanical system simulation software, signed an agreement about the development of a new software for biomechanical simulation specially designed for eMotion/BTS motion analysis systems.

This new software represents the next generation in human simulation.

Explore the possibilities of creating true physics-based biomechanics models for any living system.

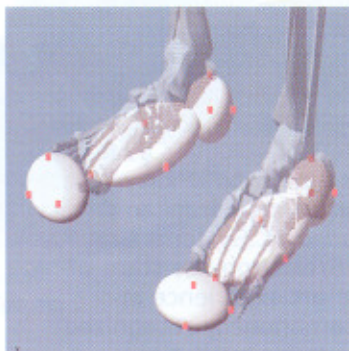


Fig. 1 - The foot model consists of several contact ellipsoids to produce ground reactions

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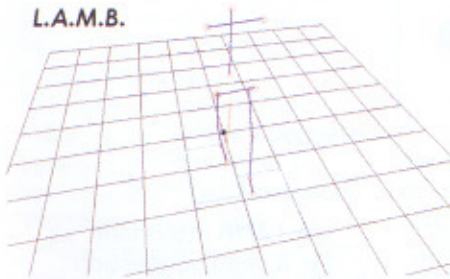
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Integration of the Motion Analysis Laboratory in the process rehabilitative



L.A.M.B.

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The availability of a modern laboratory of movement analysis and biomechanics (LAMB) inside of a rehabilitative structure demands a deep examination of the conditions that make useful and efficient its application inside the rehabilitative process. It happens, more often, that the reasons that lead to the purchase of a LAMB come from marketing strategies, as a point of technological excellence, or from research needs. Therefore it happens in institutes remitted to this aim, rather than from requests of analyses and measurements coming from rehabilitative units.

The evidence of this statement is confirmed by a minor number of publications regarding clinical applications than regarding research ones and by the scarcity of motion analysis reports, which disagree with a relative abundance of advertising in The Services Paper or in the informative brochures. During twenty years of evolution, the tasks

attributable to an instrumented gait analysis laboratory (which we prefer to call motion analysis) have been already defined elsewhere:

- Research about the biomechanics of the physiological gait
- Interpretation and evaluation of the pathological gait
- Realization of a data bank (normative parameterisation) of the normal and pathological gait
- Diagnostic and estimative support to the rehabilitative workers

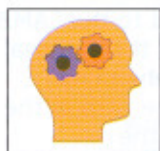
As far as the structures fully devoted to the clinic-rehabilitative mission are concerned, the task of the LAMB must necessarily focus on the last one of the points listed up, being able for the others points to refer to the great pertaining bibliography.

The mission of the LAMB to upgrade and to facilitate the diagnostic-estimative activity, in order to answer to the criteria of efficiency of the modern rehabilitative medicine, demands one much more detailed and specific definition of its targets, relatives to the rehabilitative process' steps. That allows consciously accomplishing the organizational and formative adaptations that this instrumental evolution leads to. It is necessary to understand therefore:

- Where the LAMB is placed within of the rehabilitative process;
- Which are the LAMB's levels of inference inside the process;
- How the communication between LAMB and the rehabilitative workers must be codified;
- How it modifies the organization and the efficacy of the rehabilitative team;

and the modifications of the motor performance. In the phase of planning of the rehabilitative process, the request to the LAMB, answering to the causes, needs a diagnostic contribution (diá = through and gnôsis = acquaintance) and interpretative of the functional alterations clinically observed, of the functional mechanisms below, of the actual compensations, indispensable premise in order to set up the adequate treatment's strategies to catch up the stated projects. The observation and comparison of the cinematic and dynamic variable, and of muscular timing, sampled under functional conditions (not on the bed!), allow you to state an hypothesis of logical justification of the great variability of the alterations introduced from the single patients. The subdivision of the modalities of answer of the LAMB to the requests of the wards, allows a differentiation of the reporting times depending from the period in which it takes part. Therefore, if the demand refers to an evaluation of the definition of the status of one or more pointers at the moment of the stating of the rehabilitative plan, the standard of release of the LAMB reports must obligatorily be of 2 days, in case the standard of the unit previews that the time of stating of the plan is of 3 days from the moment of the admission. If instead, the question is of diagnostic type, the requirement of a deep biomechanics analysis of the cinematic, dynamic and electromyography's parameters turning out from the acquisition, justifies the dealing of temporal standards of answer much more deferred and depending from the

operating resources of the LAMB. Outside such an organization, the answer supplied by the LAMB risks not to fulfil the necessities of the petitioning unit, or in order to succeed, it needs a large amount of operators specifically assigned to it.



The LAMB's operators skills are thought to be, not only

devoted to the specific use of the lab's machines, but also including a base computers, electronics and mechanics knowledge, enough to have a nice speech with the equipments' manufacturers and its technical supporters. The facts show that you keep in contact with them even after the installation and calibration period, for upgrading the systems and in case of equipment's bad functioning.

The lexical and conceptual understanding of the LAMB's staff, beyond extending in an engineering direction, must easily talk with the "**customers**", i.e. with the **rehabilitative unit's staff**. In order to reach it, it is necessary to gain a deeper knowledge of neurophysiology, biomechanics, neuromotorial rehabilitation techniques and orthosis applications or aids utilization. Just in this way you will meet the stated requests and overcome the operational difficulties, of the movement analysis, which aren't quick or apparently rectifiable. Holding the knowledge of the rehabilitative techniques used in the rehab unit where the requests come from, gives the

possibility of writing out reports of easy understanding observations and the evaluation.

So it can be reduced the risk of a shortage of inner LAMB's customers caused by an erroneous apparently unconscious judgment of the usefulness of instrumental motion analysis.



So far, among the LAMB's tasks, inside the rehab

structure, there is the **instructive one**.

Since the knowledge of the gait analysis, and of the elementary mechanics that is subtended to it, normally laid in the drawer of rehab operators scholastic or professional formation memories, you may need to **mould their mind** in order to find the requirements for a right and efficient use of the LAMB.

The formative program's target must be the doctors and the physiotherapists who are the possible LAMB's utiliziers, and its aims must be their knowledge of the ABC and the terminology necessary to study the cinematic and the joint dynamics, the units of measure utilized and the gait events.

It will have moreover to supply the ability to interpret the various ways of representing and plotting the measurements, and finally to suggest the possibilities of employment together with the best modalities to carry out the demands.

In order to keep high the operators' interest, which as fast as it develops by the time of the presentation of a new technology, as it

exhausts, but above all in order to steer the evolution of the quality of the demand, the formative activity cannot be exhausted in a preliminary program.



A large amount of the energetic rate of the LAMB'

s staff must be spent in a planned action of specific acknowledgement that can be realized through a direct and oral explanation of the reports, or inserting in their format some elements or scientific recalls.

The LAMB' s formative task seems necessary in order to reach the physiological stabilization of the inner request, whose level will have subsequently to be adjusted to its productive potentialities. The risk that, the high costs supported in order to acquire and manage a LAMB could turn out ineffective for the

attainment of a medicine (rehabilitation) based on the evidence, can be avoided just through a clear definition of the LAMB' s mission inside of the rehab structure, a precise definition of the targets and the inclusion among these of the inner (turned to the LAMB' s operators) and the external (turned to the rehab unit) formations, of the care of the communication, the differentiation and characterization of the products in relation to the steps of the rehab process in which they are applied:

"The doctors shouldn't rely either on the theoretical speculations about the causes of diseases, or on a single personal experience, but they should lead long series of observations and derive from them numerical syntheses leading to the truth on the effectiveness of the treatments supplied to the patients".

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