

INTERNATIONAL WORKSHOP ON
"HUMAN SUBJECTS FOR BIOMECHANICAL RESEARCH"

FIFTH ANNUAL MEETING
NEW ORLEANS, LOUISIANA
OCTOBER 18, 1977



INTRODUCTORY COMMENTS

This is the fifth annual meeting of the workshop and much has occurred since it was first organized. Our work has received wide recognition here and abroad. The anatomical coordinate system protocol developed by that committee has been proposed as part of an international standard at the International Standards Organization by Working Group 2, Subcommittee 108. Instrumentation procedures developed by workshop members have gained wide acceptance and may soon become standard at most laboratories here and abroad.

In conjunction with our efforts to develop standardization of procedures for observing, identifying, classifying and codifying lesions the NHTSA organized a workshop on head/neck injuries. The report of that workshop will be sent to all participants as soon as it becomes available.



CONTENTS

<u>MEETING MINUTES</u>	1
<u>COMMITTEE REPORTS</u>	
Guidelines Committee Proposed Guidelines for Processing Signals in Cadaver Testing N.M. Alem, J.W. Melvin, R.I. Stalnaker	14
Computerization of Head/Neck Injury Information. C. Ward	24
Ethics Committee R.G. Snyder	27
<u>TECHNICAL DISCUSSIONS</u>	
<u>EXPERIMENTAL PROCEDURES</u>	
Dissection Description and Evaluation of Injuries to the Spinal Column R. Mattern, G. Schmidt, D. Kallieris	28
Artifacts encountered in Cadaver Vascular Pressurization Experiments R.W. Smith	34
An Effective Surrogate for Impact Studies D.L. Berens, et.al.	38
A Symplified Method of Attaching Accelerometer Packages to Bone R.S. Levine, A.I. King, S.A. Tennyson	73
Vascular and Respiratory Pressurization of the Thorax - G.S. Nusholtz	81
Reference Frame and Direct Head Impact G.S. Nusholtz, N.M. Alem, J.W. Melvin, R.L. Stalnaker	97
Osteological Studies for Determining the Skeletal Quality of Cadavers Used in Crash Testing M.J. Walsh, B.J. Kalleher, W.E. Levan	112
<u>INSTRUMENTATION</u>	
Calibration for Rotational Accelerometer Devices - S. Gordon	151
Computation of Rigid Body Rotation in Three-Dimensional Space from Body-Fixed Acceleration Measurements N.K. Mital, A.I. King	156

Analysis of Angular Misalignment Errors in Mounting Linear Accelerometer to Anatomical Subjects A.K. Johnson	191
Transforming Anatomically Acquired Kinematic Parameters to Inertially Referenced Coordinates E.B. Becker	192
Validation of an Instrumentation Module Using Rate- Gyros and Linear Accelerometers for Biomechanical Applications - A.S. Hu	204
Measurement of 3-D Motion - N.H. Alem, G.L. Holsteen	242
Instrumentation for Measuring in-Vitro 3-D Motion of Intervertebral Joints A.H. Soni et. al.	271