STP 1182

Skiing Trauma and Safety: Ninth International Symposium

Robert J. Johnson, C. D. Mote, Jr., and John Zelcer, editors

ASTM Publication Code Number (PCN)
04-011820-47

ASTM
1916 Race Street
Philadelphia, PA 19103
Foreword

The Ninth International Symposium on Skiing Trauma and Safety was held in Thredbo, NSW, Australia 16–22 June, 1991. The symposium was sponsored by ASTM Committee F-27 on Snow Skiing and the International Society for Skiing Safety (ISSS). John Zelcer, St. Vincent’s Hospital, Melbourne, Australia served as chairman of the symposium. The editors of this volume are Robert J. Johnson, University of Vermont, C. D. Mote, Jr., University of California, and John Zelcer.
Contents

Overview

ALPINE SKIING EPIDEMIOLOGY


Comparison of Downhill Ski Injury Patterns—1978–81 vs. 1988–90—JASPER E. SHEALY


Alpine Skiing Injuries in Children—ARNE EKELAND, LARS NORDSLET TEN, HARALD LYSTAD, AND ÄGE HOLTMOEN

Children's Skiing Injuries in Victoria, Australia—PATRICK H. GIDDINGS, I. GRAHAM McCALLUM, AND PAUL A. DUFF

BIOMECHANICAL AND PHYSIOLOGICAL ASPECTS OF SKIING

Knee Sprains in Alpine Skiing: A Ten-Year Statistical Study—FRANCESCO ALLEGRA, PAOLA FAVA, AND FERDINANDO PRIANO

Translations and Rotations Across the Knee Under Isometric Quadriceps Contraction—ANDREW L. CHIANG AND C. D. MOTE, JR.

Influence of Ski Boot Construction on Knee Load—A Biomechanical Investigation on Safety and Performance Aspects of Ski Boots—PETER S. SCHAFF AND WOLFHART HAUSER

Strains Within the Anterior Cruciate and Medial Collateral Ligaments of the Knee at Loads Causing Failure—GREGORY S. BERNS, M. L. HULL, AND H. A. PATTERSON

Skiing Forces and Moments at the Knee and Boot Top: Boot Stiffness Effects and Modeling—ALBERT G. YEE AND C. D. MOTE, JR.
Prediction of the Loading Along the Leg During Snow Skiing—T. P. QUINN AND C. D. MOTE, JR. 128

Injury Mechanisms of the Ankle Joint in High Ski Boots: Photoelastic and Mechanical Investigations on the Human Bone Specimen—WOLFGANG PLITZ, VOLKER KUHN, ANDREAS MAIER, CHRISTIAN CARL, AND FRANK-W. HAGENA 150

Activated Muscle Contribution to Leg-Loading Capacity in Rats—LARS NORDSLETSEN AND ARNE EKELAND 162

3-D Video Motion Analysis on the Slope—A Practical Way to Analyze Motion Patterns in Alpine Skiing—PETER S. SCHAFF AND WOLFHART HAUSER 169

Functional and Technical Evaluation of the Skier by a Specific Ergometer—E. GRAPPA, A. BONVECCHIO, AND P. ZUCCO 177

SKI BINDINGS

A New Mechanical Ski Binding with Heel Release Activated by the Bending Movement at the Boot Sole—BILL CALDWELL, DAN LANDRY, AND M. L. HULL 189

An Alpine Ski Binding with Electrically Modulated Twist Release—KEVIN ESELTINE AND M. L. HULL 200

SKIING SAFETY

The Custom and Practice for Identification and Mitigation of Common Hazards at U.S. Ski Areas—An Opportunity for Standards—DICK PENNIMAN 215

Organization of Skiing Safety in a New Alpine Area: Injury Severity Score Used to Compare and Classify the Difficulty of the Slopes—KJELL ARNE BERGSTROM, OLAV ASKILD, NILS ARNE JORGENSEN, AND ARNE EKELAND 229

How to Organize a National Ski Safety Council and How This Could Contribute to Increased Skiing Safety—EJNAR ERIKSSON 236

OTHER WINTER SPORTS INJURIES

Snowboard vs. Downhill Skiing Injuries—JASPER E. SHEALY 241

Snowboarding Injuries—PETER C. JANES AND GERALD T. FINCKEN 255

Ski Jumping Injuries—TOSHIKAKI YAMAMURA, MAKOTO SUGAWARA, AND SEIICHI ISHII 262

Tobogganing Injuries in Australia—EUGENE SHERRY AND ANDREW V. BIANKIN 267

Index 273