# Subject Index

#### A

Ankle flexion, 111, 128 injury mechanisms in high ski boots, 150 Anterior cruciate ligament failure mechanisms through quadriceps contraction, 62 knee injuries, 75 strains, 89

#### B

Binding design electrically modulated twist release, 200 heel release activated by forward bending moment, 189 knee injuries, 75 Binding release values, activated muscle contribution to leg-loading capacity, 162 Bindings injuries in children, 43, 50 skiing forces and moments, 111, 128 Boot design backward spoiler, 75 knee load effect, 75 stiffness, 111 Boots ankle injury mechanisms, 150 injuries in children, 43, 50 skiing forces and moments, 111, 128

#### С

Cardiometabolic tasks, 177 Children, ski injuries, 43, 50 Competition, ski jumping injuries, 262 Co<sub>2</sub>-O<sub>2</sub> analyzer, 177

#### Е

Electromechanical twist release, bindings, 200

Electromyographic analysis, 177 Epidemiology ski injuries, 11, 23, 241 ski jumping injuries, 262 snowboarding injuries, 241, 255 tobogganing injuries, 267 Equipment design, injuries in children, 50 Ergometer, functional and technical evaluation of skier, 177

## F

Forward bending moment, boot sole, binding release, 189 Fractures boot-top, correlation with forward bending moment, 189 children, 43, 50 leg-loading capacity, 162 snowboarding, 255 tibial, 43

# H

Hafjell Alpine Center, 229 Hazards, identification and mitigation, 215 Head injuries, children, 43

# I

Injury prevention functional and technical evaluation, 177 motion analysis, 169 Injury severity score, 229

#### K

# Knee

effects of different skiing techniques, 169 skiing forces and moments, 111 translations and rotations under isometric quadriceps contraction, 62 Knee injuries, 11, 23 boot construction effects, 75 children, 50 ligament failure, 89 sprains, 57 see also Anterior cruciate ligament; Medial collateral ligament

#### L

Leg-loading capacity, activated muscle contribution, 162 Lower leg loading prediction, 128 snowboarding, 255 *see also* Ankle; Knee

#### Μ

Marker M40 binding, 189 Mechanical studies, ankle injury mechanisms, 150 Medial collateral ligament, strains, 89 Motion analysis, 169 Muscle contraction, leg-loading capacity, 162

#### Ν

National Ski Safety Council, 236 Neuromuscular activation, 177

#### P

Padding, hazards, 215 Photoelastic studies, ankle injury mechanisms, 150

### Q

Quadriceps contraction, isometric, translations and rotations across knee, 62 vastii muscle neural stimulation controlled twist release in bindings, 200

#### R

Rats, three-point bending tests, 162 Reflection photoelasticity, ankle injury mechanisms, 150 Regression analysis, 128 Respiratory tasks, 177

#### S

Safety backward release bindings, 75 identification and mitigation of hazards, 215 National Ski Safety Council, 236 new alpine area, 229 Signs, hazard identification, 215 Skiing forces, 111, 128 Skiing simulator, 177 Skiing trauma, children, 43 Ski injuries, 11 ability and, 33 children, 43, 50 compared to snowboarding, 241 compared to tobogganing injuries, 267 distribution, 23, 33 jumping, 262 mechanisms, ankle in high ski boots, 150 rates, 11, 33, 229 sex differences, 23 skiing forces and moments, 111, 128 trends, 23 see also specific injury sites Ski jumping injuries, 262 Ski Master, 177 Slope difficulty, 229 Snowboarding injuries, 241, 255 Standardization, hazard identification and mitigation, 215

# Т

Thumb injuries, children, 50 Tibia, anterior displacement, 62 Tobogganing injuries, 267 Traffic control, 215 TV commercials, ski safety, 236 Twist release, bindings, 200

#### U

Upper extremity injuries, snowboarding, 255

# V

Video, motion analysis, 169

#### W

Wind velocity, ski jumping injuries, 262

# Х

X-ray studies, ankle injury mechanisms, 150