Subject Index

A

Allograft, 92
Anchor-connector-rod assembly, 3
Anterior cervical plate, 155
Anterior column spinal units, 101
ASTM standards (See also Standards)
  F 1692-96, 68
  F 1717-01, 24, 191
  F 1717-96, 17
  F 1717-97, 209
  F 1798-97, 3, 55, 63, 191
Axial
  compression, 114, 217
  compressive load, 155
  compressive strength, 92
  gripping characteristics, 47, 191
  load cycles, 101
  rigidity, 143
  rotation, 24, 114

B

Bending
  fatigue, 3
  flexion, 63
  lateral, 3, 143
  moment distribution, 155
Biaxial mechanical test system, 143
Bilateral construct, 209
Bilevel spinal implant constructs, 24
Biomechanical testing
  model, 17
  parameters, 191
  protocol, 155
Biomechanics, 114, 155
Body-disc-body units, 101
Bone mineral density, 217
Bone screws, 68

C

Cage expulsion, 86
Calf spine, 143
Cervical spine, 155
Clinical objectives, 191
Compression bending, 17, 34, 209
Compression-flexion-extension loading, 127
Compression loads, 127, 155
Compressive shear, 114
Compressive strength, 92
Connectors, 3
  transverse, 47, 191
  transverse rod, 34
Corpectomy, 17, 34, 155, 173, 209
Corrosion
  crevice, 40
  transverse connection site, 47

D

Discs
  artificial, 114
  prothestic, 127
Drop Entry Transverse Rod Connector (DETC), 47
Durability test, 127
Dynamic compression bending, 17, 34, 209
Dynamic model, 101

E

Excessive resection, 81
Extrusion, 81

F

Fatigue
  flexion tests, 3, 63
four-point bend fatigue tests, 3
performance, 34
strength, 17, 34, 63
testing, 24
Femoral rings, 92
Finite element analysis, 24, 191
Fixation plates, 127
Fixation strength, 68
Fixed-fixed end assembly, 63
Fixed-free end assembly, 63
Flexibility testing, 173
Force sensing strut-graft (fssg), 155
Four-point bend fatigue test, 3
Freebody diagram analysis, 63
Freeze-dried allograft, 92
Frozen-thawed allograft, 92
Functional spinal units, 114
Fusion, clinical, 34
Fusion devices, 81, 86

G
Gimbal-gimbal fixture, 24, 191
Gimbal-pushrod fixture, 191
Graft/cages, 3
Graft-plate load-sharing mechanics, 155
Gripping capacity, 47

K
Kaplan-Meier
probability of reoperation, 47
surivorship analysis, 47

H
Hand held loaded models, 24
H construct, 3, 191
Human functional spinal unit (FSU), 114
Hysteresis area, 101

I
Implant failure, correlation with fatigue test results, 3
Implant loosening, 217
Inferior test block mobility, 17
Insertion loading, 92
Instrumented strut-graft mechanics, 155
Instrumented-to-native (I/N) comparison, 173
Interbody cage, 3, 86
Interbody fusion, 81, 86
Interbody structural allografts, 92
Interconnection mechanisms, 55, 63
International Organization for Standardization (ISO) standards, 217
Intervertebral disc, 101, 114, 127
space, 92
In vitro fatigue, 3
In vitro testing, 101, 191
Isola® Drop Entry Transverse Rod Connector (DETC), 47
Isola® Stainless Steel Spinal System, 209
Isola® Threaded Transverse Rod Connector (TRC), 47
Isola®-VSP, 3

L
Late operative site pain (LOSP), 47
Lateral bending characteristics, 191
profile, 3, 143
Lateral translation, 24
Linkage analysis, 191
Load cycles, 101
Load-displacement behavior, 143, 173
INDEX 235

Loading, 24, 127, 173
insertion, 92
interconnection, 63
Lordotically contoured rods, 63
Lumbar, 81, 209
Lumbar spine, 114, 143, 173

M

Mechanical
analogue model, 143
properties, 114
testing, 217
Models and modeling
biomechanical testing, 17
dynamic, 101
finite element, 24
corpectomy, 17
pull-out strength, 68
push-out testing, 86
spine, 143
transfer function, 101

N

Neutral zone, 101

O

Occipito-cervical-thoracic corpectomy
constructs, 17
Orthopaedic medical devices, 68, 92

P

PA axis rotation, 24
Peak to peak, 101
Pedicle screws, 34
angle, 209
common complications, 55
kinematics, 217
mechanical behavior, 217
pull-out, 68

PLIF, 81
Posterior cervical, 17
Preload, 173
Prosthetic intervertebral disc (PID), 127
Prosthetic nucleus (PN), 127
Pull-out strength, 68, 86
Push-out, 86
Pushrod-gimbal fixtures, 24

R

Residual tensile stress, 63
Retrieval analysis, 40
Retropulsion, 86
Rods, 3, 34, 55, 63

S

Scoliosis, 47
Screw-rod interconnection, 55, 63
Screws, 191
bone, 68
pedicle, 55, 68, 209, 217
Segmental vertebral motion, 155
Six degrees of freedom, 173, 191
Spinal corpectomy
(See also Corpectomy)
Spinal fixation, 40
Spinal fusion construct, 40, 92
Spinal instrumentation, 155
Spine model, 143
Spine testing, 143
Stainless steel, 40
Standards (See also ASTM
Standards), 40, 86
ISO, 217
Static compression bending, 209
Static push-out test, 86
Stiffness, 114, 155, 173, 209
torsional, 17
strength test, interconnector, 55
Stress relaxation, 101
Strut-graft load, 155
Surface finishes, 40
SynEx, 173

Test blocks, 209
mobility, 17
Threaded transverse rod connector (TRC), 47
Three degrees of freedom, 24
Titanium, 40
Torsion, 17, 24, 47, 143
Torsional gripping characteristics, 47, 191
stiffness, 34
Transfixed thoracolumbar constructs, 191
Transverse rod connectors, 34, 47, 191
Tutoplast® processed bone allograft, 92

U
UHMWPE, 217
Unconstrained finite element models, 24
Unilateral construct flexion fatigue test, 3

V
VentroFix, 173
Vertebrae motion, 24

Y
Yield load, 17
Yield strength, 209