

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
 prosthetic, 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

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

K

Kaplan-Meier
 probability of reoperation, 47
 survivorship analysis, 47

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

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

T

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