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PERSONAL INFORMATION

Date of Birth: August 23, 1960
Place of Birth: Omsk, Russia
Family status: Married. Has one daughter.

CURRENT POSITION

Director, Division of Tissue Adaptation & Neogenesis
Seay Center for Musculoskeletal Research
Texas Scottish Rite Hospital for Children, Dallas, TX

APPOINTMENTS

- Assistant professor in the Department of Biomedical Sciences, Baylor College of Dentistry
- Adjunct Member of the Graduate Faculty, Baylor College of Dentistry

EDUCATION AND POSTGRADUATE TRAINING:

- 1977-1983 Medical School. Omsk, Russia
- 1983 State License. Medical Doctor Diploma 3B#763648. Omsk, Russia
- 1983 -1990 Physician. Department of Internal Medicine and Diagnostic Electrophysiology. National Scientific Center "Restorative Traumatology and Orthopedics". Kurgan, Russia
- 1985 Fellowship. Diagnostic Electrophysiology in Cardiology. National Institute for Advanced Medical Training. St. Petersburg, Russia
- 1986 Fellowship. Electromyography and Clinical Neurophysiology. Academy of Medical Science,

National Scientific Center of Clinical Pathology and Physiology, Center of Neuromuscular Diseases.
Moscow, Russia

- 1989 Physician-Electrophysiologist Diploma # 1055/ 05-11-89

STAFF POSITIONS:

- 1983-1986 Physician. Department of Internal Medicine and Diagnostic Electrophysiology. National Scientific Center “Restorative Traumatology and Orthopedics”. Kurgan, Russia
- 1987-1991: Physician Electrophysiologist. Department of Diagnostic Electrophysiology. National Scientific Center “Restorative Traumatology and Orthopedics”. Kurgan, Russia
- 1991-1995 Neurology Research Assistant. Texas Scottish Rite Hospital for Children, Dallas, TX, USA
- 1995-1999 Research Scientist. Texas Scottish Rite Hospital for Children, Dallas, TX, USA
- 1999-2004 Director. Laboratory of Soft Tissue Adaptation to Distraction Osteogenesis. Texas Scottish Rite Hospital for Children, Dallas, TX, USA
- 2004-Present Director. Division of Soft Tissue Adaptation & Neogenesis. Seay Center of Musculoskeletal Research. Texas Scottish Rite Hospital for Children, Dallas, TX, USA

PROFESSIONAL AFFILIATIONS:

- 1992 ASAMI - North America Association for Application of Ilizarov Method in the USA
- 1995 The Limb Lengthening and Reconstruction Society
- 1999 SIROT – International Research Society for Orthopedics and Traumatology
- 2004 COA – Combined Orthopaedic Assosiation

PRACTICE SPECIALIZATION PROFILE & RESEARCH INTEREST:

- Electromyography and Clinical Neurophysiology
- Electrodiagnostics and Intraoperative Neurological Monitoring in Orthopedics
- Muscle Regeneration and Histology
- Distraction Osteogenesis and Tissue Neogenesis
- Limb Length Discrepancy and Growth Modulation

PROFESSIONAL CONTRIBUTION

Invited Lectureship

- **Symposium at ILLRS Congress**, Miami, FL, November 4-7, 2015
 - Intraoperative neurological monitoring in pediatric limb lengthening and reconstruction.
- **The 37th Annual Brandon Carrell Visiting Professorship**, TSRHC, Dallas TX, June 12-13, 2015
 - Variable adaptation of the ipsilateral femur to Blount's disease.
- **AAOS Specialty day** invited presentation awarded title of Best Abstract of the Year, San Francisco, February 7-11, 2012
 - SSEP monitoring of peripheral nerve function during external fixation procedures
- **CLESF -2011** – faculty member and lecturer at 5th Annual Chicago Lower Extremity Surgical Symposium, Chicago, September 19-21, 2011.
 - Intraoperative monitoring of external fixation procedures
- **ASAMI Brazil** - lecturer at 10th biannual meeting, Gramado, Brazil, September 3-5, 2010
 - Mechanisms of Skeletal Muscle Adaptation to Limb Lengthening.
 - Gene expression analysis in skeletal muscles after 20% limb lengthening.
 - Intraoperative Monitoring of Peripheral Nerves during External Fixator Application and Deformity Correction.
- **UCSD Center for Limb Salvage and Functional Reconstruction** – lecturer. San Diego, June 25-27, 2010
 - Mechanisms of skeletal muscle adaptation to limb lengthening
- **JAEFLL-2010** - invited lecturer. Makarov MR: Mechanisms of skeletal muscle adaptation to limb lengthening. 23-rd annual meeting of Japanese Association of External Fixation and Limb Lengthening. Tokyo, Japan, January 15-16, 2010
- **AAOS - specialty day** faculty member and lecturer. Makarov MR: Insufficient sarcomerogenesis may contribute to the development of muscle contractures during limb lengthening. Specialty day of ASAMI – North America. San Francisco, CA, March 13, 2004
- **ASSH pre-course tutorial** faculty member and lecturer. Makarov MR: SSEP-monitoring of peripheral nerves during external fixation of upper extremities. The tutorial entitled “Disorders of the Pediatric Forearm, Wrist and Hand”. Phoenix, AZ, October 3, 2002
- **POSNA tutorial** faculty member and lecturer. Makarov MR: Peripheral nerves function monitoring during distraction osteogenesis procedures. The tutorial entitled “Ilizarov Technique. Lower Extremity Deformity Correction, the TSRH Way”. Dallas, TX, October 5-6, 1995

Activities within Thesis and Graduate Committee

Teaching and research coordination of PhD students:

- Garcia-Morales, DDS – 2002- 2007
- Mohammed El-Salanty, MBBS - 2002-2004

Teaching and research coordination of MS students:

- Carrie Lindsey, DDS. Effect of gradual limb lengthening on skeletal muscle adaptation during 20% and 30% limb lengthening. Texas A7M University System Health Science Center – Baylor College of Dentistry. Thesis defended in 2001
- Jessica Downs, DDS. The effect of gradual distraction on skeletal muscle pennation angle. Texas A7M University System Health Science Center – Baylor College of Dentistry. Thesis defended in 2003

Certified Inventions

- New stimulating electrodes for clinical electromyography. No 52/10.11.87, Kurgan, Russia.

Research Studies Conducted at TSRH

- Results of open epiphysiodesis for treatment of limb length difference (TSRH Research Fund, Project #1085, 2013)
- The effect of low-dose BMP delivered in nanoparticle form to accelerate limb lengthening regenerate consolidation in rabbits (TSRH Research Fund, Project #1040, 2011)
- Role of intraoperative neurologic monitoring in external fixation procedures: a retrospective study. (TSRH Research Fund, Project #1032, 2010)
- The effect of bone marrow-derived cells on bone regeneration during limb lengthening in rabbit model (TSRH Research Fund, Project #942, 2008)
- Isolation and differentiation of human mesenchymal stem cells from surgically discarded bone tissues (TSRH Research Fund, Project #932, 2008)
- Evaluation of the Goat's Hind Limb Muscle Anatomy, Architecture, Morphology, & Ultrastructure (TSRH Research Fund, Project #517, 2001)
- Adaptation of Skeletal Muscle to Distraction: Sarcomere Number & Length Changes during 20% Limb Lengthening (TSRH Research Fund, Project #468, 2000)
- Distraction Histogenesis: Histomorphological Changes of Skeletal Muscles during Limb Lengthening (TSRH Research Fund, Project #420, 1998-2003)
- Distraction Histogenesis: Adaptation of Skeletal Muscles & Peripheral Nerves to Gradual Traction (TSRH Research Fund, Project #418, 1998)
- Distraction Histogenesis: Muscle Defect Reconstruction Using Gradual Traction, (TSRH Research Fund, Project #417, 1998)
- Repair of Nerve Defects by Gradual Distraction via External Fixation (TSRH Research Fund, Project #402, 1997)
- Adaptation of Skeletal Muscle to Gradual Distraction (TSRH Research Fund, Project #389, 1998)
- Mechanical & Histological Characterization of Intramembranous Bone Remodeling Following Sagittal Distraction Osteogenesis of the Mandible (TSRH Research Fund, Project #358, 1996)
- Ilizarov Studies: Double Level Lengthening (TSRH Research Fund, Project #329, 1995)
- The Effect of Intramuscular Injection of Botulinum Toxin Type A in Healthy Goats (TSRH Research Fund, Project #319, 1995)

- Long-Term Effects of Acute Nerve Injury by K-Wires during Ilizarov Instrumentation Application (TSRH Research Fund, Project #298,1994)
- Ilizarov Studies: Multilevel Lengthening (TSRH Research Fund, Project #296, 1994)
- Evaluation of Peripheral Nerve Function & Structural Integrity during K-Wire Application & Acute Limb Lengthening Using Ilizarov Instrumentation (TSRH Research Fund, Project #249, 1992)
- Optimization of the Ilizarov Limb Lengthening Method by Evaluation of Individual Parameters of Distraction (TSRH Research Fund, Project# 242, 1992)
- Ilizarov Technique Applied to the Spine (TSRH Research Fund, Project #240, 1992)
- The Effect of Limb Lengthening by the Ilizarov Method on the Peripheral Nerves Function in Humans (TSRH Research Fund, Project #220, 1991)

Research Studies Conducted at Baylor College of Dentistry

- Evaluation of the Consolidation Period Following Sagittal Osteodistraction of the Canine Mandible (Baylor College of Dentistry Orthodontic Special Fund, 1996)
- Widening & Lengthening the Mandible by Distraction Osteogenesis (Baylor College of Dentistry, 1997)

BIBLIOGRAPHY

Book Chapters:

1. **Makarov M**, Karol L, Samchukov M: Intraoperative SSEP Monitoring of Circular External Fixation in Achondroplasia. In: Rozbruch SR, Hamdy RC (eds). Limb Lengthening and Reconstruction Surgery Case Atlas. Adult Deformity, Tumor, Upper Extremity. Springer International Publishing, Switzerland, Vol 1, 183-189, 2015
2. **Makarov M**, Johnston CE, Samchukov M. Intraoperative SSEP monitoring of Circular External Fixation for Revision of Brown Rotationplasty. Pediatric Deformity. Springer International Publishing, Switzerland, Vol 3, 427-433, 2015
3. Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG: Distraction Osteogenesis of the orthopedic skeleton: Basic principles and clinical applications. In: Pietzak W, Eppley B (eds). Musculoskeletal tissue regeneration. Biological materials and methods. Humana Press, Tatowa, NJ, USA, 183-198, 2008
4. Samchukov ML, **Makarov MR**, El-Salanty M, Cherkashin A, Birch J: Muscle Adaptation to Gradual Distraction. In Arnaud E, Diner PA (eds). Maxillofacial and Craniofacial Distraction, Monduzzi Editore, Bologna, Italy, 15-20, 2003
5. **Makarov MR**, Samchukov ML, Cope JB, Muirhead DA: Distraction Osteogenesis: Muscles. In the Samchukov, ML, Cope BB, Cherkashin AM (eds). Craniofacial Distraction Osteogenesis. St. Lous, Mosby, 75-88, 2001

6. **Makarov MR**, Samchukov ML, Cope JB: Distraction Osteogenesis: Nerves. In the Samchukov, ML, Cope BB, Cherkashin AM (eds). Craniofacial Distraction Osteogenesis. St. Lous, Mosby, 89-101, 2001
7. **Makarov MR**, Kochutina LN, Samchukov ML, Birch JG, Welch RD: Muscle Histomorphology Associated with Distraction Osteogenesis. In : Stein H, Suk SI, Leung PC, Thorngren KG, Akesson W (eds)., SIROT 99, 8th World Triennial Congress, Sidney, Australia, Freund Publishing House Ltd. 647-652, 1999
8. Samchukov ML, Cherkashin AM, Makarov MR, Birch JB, Shoemaker S, Welch RD: Muscle adaptation During Single and Double Level Tibial Lengthening. In : Stein H, Suk SI, Leung PC, Thorngren KG, Akesson W (eds)., SIROT 99, 8th World Triennial Congress, Sidney, Australia, Freund Publishing House Ltd. 460-466, 1999

Journal Publications:

1. Samchukov ML, Birch JG, Cherkashin AM, **Makarov MR**: Deformity correction in pediatric skeletal dysplasia treatment challenges and solutions. J Pediatr Orthop B 24:131-138, 2015
2. **Makarov MR**, Samchukov ML, Birch JG, Cherkashin AM, Sparagana SP, Delgado MR: Somatosensory evoked potential monitoring of peripheral nerves during external fixation for limb lengthening and correction of deformity in children. J Bone Joint Surg Br.10:1421-6, 2012
3. Gyawali D, Nair, Zhang Y, Tran RT, Zhang C, Samchukov M, **Makarov M**, Kim H, Jian Yang. Citric acid-derived in situ crosslinkable biodegradable polymers for cell delivery. Biomaterials 31 : 9092-9105, 2010
4. **Makarov MR**, Samchukov ML, Birch JG: The role of variable adaptation to limb lengthening in the development of joint contractures. An experimental study on goats. J. Pediatr. Orthop. 29:175-181, 2009
5. Elsalanty M, **Makarov MR**, Cherkashin A, Birch JG, Samchukov ML: Changes in pinnate muscle architecture after gradual tibial lengthening in goats. Anat Rec 290 (5): 461-467, 2007
6. **Makarov MR**, Samchukov ML, Birch JG, Johnston CE, Delgado MR, Rampy PL, Van Allen EM: Acute Deformity Correction of Lower Extremities under SSEP-Monitoring Control. J. Pediatr. Orthop 23: 470-477, 2003
7. Lindsey CA, **Makarov MR**, Shoemaker S, Birch JG, Buschang PH, Cherkashin AM, Welch RD, Samchukov ML: The effect of the Amount of Limb Lengthening on Skeletal Muscle. Clin Orthop 402:278-287, 2002
8. **Makarov MR**, Kochutina LN, Samchukov ML, Birch JG, Welch RD: Effect of Rhythm and Level of Distraction on Muscle Morphology: An Animal Study. Clin Orthop 384:250-264, 2001
9. **Makarov MR**, Kochutina LN, Birch JB, Samchukov ML, Welch RD: Muscle Histomorphology after Limb Lengthening using Various Parameters of Distraction. Journal of Child Neurology 14(3): 183-184, 1999

10. **Makarov MR**, Harper RP, Cope JB, Samchukov ML: Evaluation of inferior alveolar nerve function during distraction osteogenesis in the dog. *J Oral Maxillofac Surg* 56:1417-1423, 1998
11. **Makarov MR**, Delgado MR, Birch JG, Samchukov ML: Peripheral nerve monitoring during surgery for upper extremity lengthening. *Techniques in Hand and Upper Extremity Surgery* 2(1):56-63, 1998
12. Welch RD, Birch JG, **Makarov MR**, Samchukov ML: Histomorphometry of distraction osteogenesis in a caprine tibial lengthening model. *J Bone Miner Res* 13: 1-9;1998
13. **Makarov MR**, Delgado MR, Birch JG, Samchukov ML: Monitoring peripheral nerve function during external fixation of upper extremities: *J Pediatr Orthop* 17:663-667, 1997
14. **Makarov MR**, Delgado MR, Birch JG, Samchukov ML: Nerve function monitoring during external fixation surgeries. *Journal of Child Neurology*, Vol.12, Number 2, February 1997
15. **Makarov MR**, Birch JG, Delgado MR, Welch RD, Samchukov ML: Effects of external fixation and limb lengthening on peripheral nerve function. *Clin Orthop* 329: 310-316, 1996
16. **Makarov MR**, Delgado MR, Birch JG, Samchukov ML: Intraoperative SSEP monitoring during external fixation procedures in lower extremities. *J Pediatr Orthop* 16:155-160, 1996
17. **Makarov MR**, Delgado MR, Samchukov ML, Welch RD, Birch JG: Somatosensory evoked potential evaluation of acute nerve injury associated with external fixation procedures. *Clin Orthop* 308:254-63, 1994

Published Abstracts:

1. **Makarov MR**, Birch MR, Smith C, Jackson T, Jo C: The response of the ipsilateral healthy femur to limb length inequality in unilateral infantile and adolescent Blount disease is different. Abstract#263. In the abstract book of ILLRS Congress, Miami, FL, November 4-7, 2015
2. **Makarov MR**, Birch MR, Samchukov ML, Sparagana S, Van Allen E: Intraoperative neurological monitoring of patients with skeletal dysplasias. Abstract # 139. In the abstract book of ILLRS Congress, Miami, FL, November 4-7, 2015
3. Rathjen KE, **Makarov MR**, Birch JG, Ramo BA: Complications associated with Epiphysiodesis for management of leg length inequality. In abstract book of LLRS & ASAMI-NA, Montreal, CA, July 25-26, 2014
4. **Makarov MR**, Birch JG, Rathjen KE: Ipsilateral healthy leg segment response to Physeal Trauma causing limb length discrepancy. In abstract book of LLRS & ASAMI-NA, Montreal, CA, July 25-26, 2014
5. **Makarov MR**, Birch JG, Cherkashin AM, Samchukov ML: Role of intraoperative peripheral nerve monitoring in external fixation procedures. 2nd World Congress on External Fixation & Bone Reconstruction Societies, Bahia, Brazil, Sept 6-8, 2012
6. Samchukov ML, Birch JG, Cherkashin AM, Karol L, **Makarov MR**: Circular External Fixation in Pediatric Skeletal Dysplasia: Treatment Challenges and Solutions. 2nd World Congress on External

Fixation & Bone Reconstruction Societies, Bahia, Brazil, Sept 6-8, 2012

7. **Makarov MR**, Samchukov ML, Cherkashin AM, Birch JG, Delgado MR, Sparagana S, Van Allen E, Rampy P: Monitoring of peripheral nerve function during external fixation procedures. In abstract book of ASAMI North America, Chicago, Il. July 22-23, 2011
8. **Makarov MR**, Samchukov ML, Birch JG: Effect of limb lengthening on skeletal muscle gene expression profile. In abstract book of 6th international congress on external fixation and bone reconstruction. Barcelona, Spain, October 20-22, p.189, 2010
9. **Makarov MR**: Mechanisms of skeletal muscle adaptation to limb lengthening. In abstract book of 23-rd annual meeting of Japanese Association of External Fixation and Limb Lengthening. Tokyo, Japan, January 15-16, p.34-35, 2010.
10. **Makarov MR**, Samchukov ML, Birch JG: Different histomorphologic changes of antagonistic muscles after distraction. In abstract book of ASAMI International, St. Petersburg, Russia, May 28-30, p.333,2008
11. **Makarov MR**: Different approach to antagonistic muscles may prevent joint contractures during limb lengthening. In abstract book of World congress on External Fixation, Cairo, Egypt, Oct 17-17, p132, 2007
12. **Makarov MR**, Samchukov ML, Birch JG: Effect of limb lengthening on force-generating properties of skeletal muscles. In abstract book of ASAMI North America, Chicago, Il. July 2007, p.40, 2007
13. **Makarov MR**, Birch JG, Samchukov ML: Biomechanical considerations of joint contractures during goat tibial lengthening. In abstract book of 4-th International ASAMI International meeting Kyoto, Japan. October 11-14, p.147, 2006
14. Samchukov ML, **Makarov MR**, Elmonoufy N, Wise C, Birch JG: Comparative MYOZ2 gene expression in different skeletal muscles after limb lengthening. In abstract book of 4-th International ASAMI meeting Kyoto, Japan. October 11-14, p. 279, 2006
15. **Makarov MR**, Wise C, Elmonoufy N, Samchukov ML, Birch JG: Differential expression of MYOZ-2 in skeletal muscles undergoing adaptation to limb lengthening. In abstract book of 16-th ASAMI Meeting, San Diego, USA July 21-23, p.4, 2006
16. **Makarov MR**, Cornelia R, Birch JG, Samchukov ML: Histomorphometric analysis of goat skeletal muscle after tibial lengthening. In abstract book of 15-th ASAMI meeting, New York, USA July 29-31, p.35, 2005
17. Samchukov ML, Eimonoufy N, **Makarov MR**, Muirhead D, Birch JG: Comparative gene expression between myotendinous junction and belly of lengthened skeletal muscle. In abstract book of 15-th ASAMI meeting, New York, USA July 29-31, p.34, 2005
18. **Makarov MR**, Samchukov ML, Birch JG: Different response of antagonistic muscles to distraction. In abstract book of World Congress on External Fixation, Lima, Peru. May 26-28, p. 106, 2005
19. **Makarov MR**, Samchukov ML, Birch JG: Mechanisms of joint contractures during limb lengthening. In abstract book of 11th Meeting of the Combined Orthopedic Associations, Sydney, Australia October 24-29 p. 112-113, 2004

20. Samchukov ML, Elmonoufy N, Smith E, Muirhead D, **Makarov MR**, Birch JG: Gene expression profiling in skeletal muscles during limb lengthening. JBJS 87-B, Issue SUPP_III, 316, 2004 and In abstract book of 11th Meeting of the Combined Orthopedic Associations, Sydney, Australia October 24-29 , p.11, 2004
21. **Makarov MR**, Samchukov ML, Birch JG, Cherkashin AM: Muscle related mechanisms of joint contracture development during limb lengthening. In abstract book of 3rd Meeting of ASAMI International, Istanbul, Turkey, May 27-29, p. 209, 2004
22. Birch JG, Eimonoufy N, Smith E, Samchukov ML, Muirhead D, **Makarov MR**: Effect of gradual distraction on gene expression in striated muscles. In abstract book of 3rd Meeting of ASAMI International, Istanbul, Turkey, May 27-29, p. 210, 2004
23. Cherkashin AM, El-Salanty **Makarov MR**, Samchukov ML, Birch JG: Effect of limb lengthening on skeletal muscle function. In abstract book of 3rd Meeting of ASAMI International, Istanbul, Turkey, May 27-29, p. 204, 2004
24. **Makarov MR**, Samchukov ML, Birch JG: Microscopic evaluation of single muscle fibers after distraction. In abstract book of 14th annual ASAMI North America Meeting, Toronto, Canada, p.2, 2004
25. Birch JG, El-Salanty M, Cornelia R, Muirhead D, **Makarov MR**, Samchukov : The effect of gradual stretching on histomorphometry of skeletal muscle fibers. In abstract book of 14th annual ASAMI North America Meeting, Toronto, Canada, p.3, 2004
26. Samchukov ML, Eimonoufy N, Smith E, Muirhead D, **Makarov MR**, Birch JG: Mechanisms of muscle adaptation to limb lengthening: Gene expression profiling. In abstract book of 14th annual ASAMI North America Meeting, Toronto, Canada, p.5, 2004
27. **Makarov M**, Samchukov M, Birch J. Insufficient sarcomerogenesis may contribute to the development of muscle contractures during limb lengthening. POSNA Annual Meeting, paper 24, St. Louis, MS, Apr 27 - May 1, 2004
28. Elmonoufy NA, Smith EJ, **Makarov, MR**, Muirhead DE, Birch JG, Samchukov ML: Gene expression in skeletal muscle undergoing adaptation to limb lengthening. In abstract book “ New directions in Biology and Disease of Skeletal Muscle”. San Diego CA, 2004
29. Garcia-Morales P, **Makarov M**, Cherkashin A, Birch J. Samchukov M: Different response of various muscle groups to distraction osteogenesis. In abstract book of 85th AAOMS Annual Meeting, Toronto, Ontario, 2003
30. **Makarov MR**, Samchukov ML, Birch JG: Insufficient sarcomerogenesis may contribute to the development of muscle contractures. In abstract book of 13th annual ASAMI North America Meeting, Boston, MA, 2003
31. Birch JG, El-Salanty M, Downs J, **Makarov MR**, Samchukov ML: The effect of fiber length and pennation angle changes during limb lengthening on muscle force. In abstract book of 13th ASAMI North America Annual Meeting, Boston, MA, 2003
32. Samchukov ML, Birch JG, **Makarov MR**, Cherkashin AM: Forearm lengthening and deformity correction:

Is it justified? In abstract book of 13th annual ASAMI North America Meeting, Boston, MA, 2003

33. **Makarov MR**, Samchukov ML, Birch JG: To understanding of muscle contractures during distraction osteogenesis. In the abstract book of 4th International congress of Maxillofacial and Craniofacial Distraction. Paper S01.11, Paris, France, 2003
34. El-Salanty M, Downs J, **Makarov M**, Samchukov M: The effect of fiber length and pennation angle changes during distraction on force generation ability of skeletal muscles. In the abstract book of 4th International congress of Maxillofacial and Craniofacial Distraction. Paper S01.10, Paris, France, 2003
35. Samchukov ML, **Makarov MR**, Cherkashin AM, El-Salanty M, Birch JG: Muscle adaptation to gradual incremental traction . In the abstract book of 4th International congress of Maxillofacial and Craniofacial Distraction. Paper S01.c5, Paris, France, 2003
36. Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG: Adaptation of skeletal muscles to limb lengthening. At the proceeds of ACAMI-North America AAOS Specialty Day, New Orleans, LA, 2003
37. **Makarov MR**, Samchukov ML, Birch JG, Delgado MR, Rampy PL, Van Allen EM: SSEP-monitoring of peripheral nerves during external fixation of upper extremities. In the proceeds of 57th ASSH Annual Meeting. Phoenix, AR, 2002
38. **Makarov MR**, Birch JG, Johnston CE, Samchukov ML: Correction of large rotational deformities using external fixator and intraoperative monitoring of neural function. At the abstract book of 12th SICOT/SIROT World Congress, p. 585, San Diego, CA, 2002
39. Garcia-Morales P, **Makarov MR**, Cherkashin AM, Birch JG, Samchukov ML: Effect of muscle architecture on response to gradual lengthening. L Oral Maxillofac Surg 60:28, 2002
40. **Makarov MR**, Samchukov ML, Birch JG, Morales P, Cherkashin AM: Muscle versus myofiber changes in various muscle groups after limb lengthening. In abstract book of 12th annual ASAMI North America Meeting, Paper 41, Dallas, TX, 2002
41. Cherkashin AM, **Makarov MR**, Samchukov ML, Birch JG: Effect of limb lengthening on force generating ability of skeletal muscle. In abstract book of 12th annual ASAMI North America Meeting, Paper 40, Dallas, TX, 2002
42. Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG: Distribution of muscle length increase during gradual limb lengthening. In abstract book of 12th annual ASAMI North America Meeting, Paper 42, Dallas, TX, 2002
43. **Makarov MR**, Samchukov ML, Birch JG, Van Allen E, Rampy P: SSEP-monitoring for detection of nerve compromise during acute deformity correction by external fixator. In abstract book of 2nd International ASAMI Meeting, Rome, Italy, p.72, 2001
44. Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG: Mechanism of skeletal muscle adaptation to gradually increasing length. In abstract book of ASAMI - International, Rome, Italy, p.73, 2001
45. **Makarov MR**, Samchukov ML, Birch JG, Delgado MR: Acute deformity correction of the lower extremities under SSEP-monitoring control. In Abstract Book of 11-th ASAMI North America Meeting,

Berkeley, CA, p.37, 2001

46. Samchukov ML, **Makarov MR**, Shoemaker S, Cherkashin AM: The effect of the amount of lengthening on skeletal muscle sarcomere number and length. In Abstract Book of 11th ASAMI North America Meeting, Berkeley, CA, p.19, 2001
47. Brooks MA, Cope JB, **Makarov MR**, Samchukov ML, Harper RP: Trigeminal ganglia and inferior alveolar nerve apoptosis after mandibular distraction osteogenesis. In the proceeds of IADR General Session, Washington, DC, paper# 2307, 2000
48. Zhang H, Liu H, Su D, Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG, Welch RD: Cell proliferation and histomorphology of distraction osteogenesis during monofocal and bifocal lengthening. At the abstract book of 46th ORS Annual Meeting, Orlando, FL, paper# 0723, 2000
49. **Makarov MR**, Samchukov ML, Birch JG, Welch RD, Cherkashin AM: Effect of single and double level lengthening on peripheral nerve function. In Abstract Book of 10th ASAMI North America Meeting, Orlando, Fl, p. 6, 2000
50. **Makarov MR**, Samchukov ML, Birch JG, Welch RD, Cherkashin AM: Effect of distraction on peripheral nerve function during tibial lengthening. In Abstract Book of SIROT meeting, Beijing, China, p.88, 2000
51. Samchukov ML, **Makarov MR**, Shoemaker SD, Cherkashin AM, Birch JG: Sarcomere number and length changes during 20% limb lengthening. In Abstract Book of SIROT meeting, Beijing, China, p.87, 2000
52. Zhang H, Liu H, Su D, Samchukov ML, **Makarov MR**, Cherkashin AM, Birch JG, Welch RD: Cell proliferation and histomorphology of distraction osteogenesis during 20% monofocal and bifocal lengthening. In Abstract Book of SIROT meeting, Beijing, China, p 49, 2000
53. Birch JG, Samchukov ML, **Makarov MR**, Shoemaker SD, Cherkashin AM: Adaptation of different muscle groups to 30% lengthening. In Abstract Book of 10-th ASAMI North America Meeting, Orlando, Fl, 2000
54. Samchukov ML, **Makarov MR**, Shoemaker SD, Cherkashin AM, Birch JG, Jordan K: Quantitative analysis of sarcomere number and length during limb lengthening: A preliminary report. In Abstract Book of 10-th ASAMI North America Meeting, Orlando, Fl, 2000
55. Cherkashin AM, Samchukov ML, **Makarov MR**, Welch RD, Birch JG: Distribution of muscle length increase during 30% limb lengthening. In Abstract Book of 10-th ASAMI North America Meeting, Orlando, Fl, 2000
56. Shoemaker SD, **Makarov MR**, Samchukov ML, Cherkashin AM, Birch JG. The effect of limb lengthening on different muscle groups. In Abstract Book of Ninth ASAMI North America Meeting, Dana Point, CA, 1999
57. Birch JG, Samchukov ML, **Makarov MR**, Welch RD, Kochutina LN. The influence of the level of lengthening on muscle adaptation to distraction. In Abstract Book of Ninth ASAMI North America Meeting, Dana Point, CA, 1999
58. Samchukov ML, Cherkashin AM, Birch JG, **Makarov MR**, Shoemaker SD. Distribution and mechanism of muscle length increase during gradual limb lengthening. In Abstract Book of Ninth ASAMI North America Meeting, Dana Point, CA, 1999

59. **Makarov MR**, Ezaki M, Samchukov ML, Cherkashin AM, Welch RD. Repair of nerve defects by gradual distraction: A pilot animal study. In Abstract Book of Ninth ASAMI North America Meeting, Dana Point, CA, 1999
60. **Makarov MR**, Kochutina LN, Samchukov ML, Birch JG, Welch RD. Effect of various rhythms of distraction on muscle histomorphology. In Abstract Book of Ninth ASAMI North America Meeting, Dana Point, CA, 1999
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