

CURRICULUM VITAE

ALEXANDER S. ARUIN

PROFESSIONAL ADDRESS:

Department of Physical Therapy
University of Illinois at Chicago
(M/C 898) 1919 West Taylor Street,
Chicago, Illinois 60612
Tel: (312) 3555-0904 (Office)
(312) 355-0902 (Laboratory)
Fax: (312) 996-4583
E-mail: aaruin@uic.edu
<http://www.uic.edu/ahp/pt/Aindex.html>

RESIDENTIAL ADDRESS:

27W174 Walnut Drive
Winfield, IL 60190
Tel: (630) 260-0896

PROFESSIONAL OBJECTIVES:

- 1) Conduct research in motor disorders and rehabilitation, biomechanics, and motor control.
- 2) Teach biomechanics, motor rehabilitation, motor control, and research methods.
- 3) Develop an interdisciplinary approach to the study of human movement.
- 4) Develop new technologies for training of healthy individuals and for providing physical therapy and rehabilitation for injured and disabled individuals.

EDUCATION

- D.Sc. (Ph.D.) in Biomechanics, Institute of Traumatology and Orthopedics, Latvia, 1990
- M.S. in Exercise and Sport Science, Central Institute of Physical Culture, USSR, 1982
- Ph.D. in Biological and Medical Cybernetics (Biomedical Engineering), Institute of Artificial Organs and Transplantation, Moscow, USSR, 1978
- M.S. in Electrical Engineering, Moscow Institute of Electronic Engineering, USSR 1969

D.Sc. Dissertation: *Biomechanical Foundations of Human Environmental Design*

Ph.D. Dissertation: *Experimental Study and Modeling of Biomechanical Characteristics of Human Lower Extremities*

PROFESSIONAL INFORMATION

- Associate Professor, Director of the Knecht Movement Science Laboratory, Department of Physical Therapy. University of Illinois at Chicago, 2000 to present

- Associate Professor, Department of Bioengineering, University of Illinois at Chicago, 2000 to present
- Associate Professor, School of Kinesiology, University of Illinois at Chicago, 2003 to present
- Senior Research Scientist/Director of the Motion Analysis Laboratory. Rehabilitation Foundation, Inc., Marianjoy Rehabilitation Hospital and Clinics, Wheaton, Illinois, 1997 to 2000
- Associate Professor, Department of Physical Medicine & Rehabilitation. Rush Medical College, Chicago, Illinois, 1997 to present
- Senior Scientist (full professor rank). Department of Kinesiology, Pennsylvania State University, Pennsylvania, 1995 - 1997
- Assistant Professor. Department of Physical Medicine & Rehabilitation Rush-Presbyterian St. Luke's Medical Center, Chicago, Illinois, 1992 - 1995
- Full Professor, Deputy Chairman on Research, Department of Exercise and Sport Science, and Director of the Laboratory of Ergonomic (Occupational) Biomechanics. Moscow Institute of Electronic Engineering, Moscow, 1990-1992
- Associate Professor, Deputy Chairman on Research, Department of Exercise and Sport Science, and Director of the Laboratory of Ergonomic (Occupational) Biomechanics. Moscow Institute of Electronic Engineering, Moscow, 1982-1990
- Assistant Professor, Research Associate. Department of Exercise and Sport Science. Moscow Institute of Electronic Engineering, USSR, 1969-1982

HONORS AND AWARDS

- Silver Medal of the Russian Academy of Natural Sciences for the Achievements in Medicine and Public Health, 2000
- NIH First Independent Research Award, 1998
- The Finest Inventor of the City of Moscow, USSR, 1987
- Gold Medal. All-USSR Competition in Research in Sports, 1982
- Gold Medal of the USSR Department of Higher Education for the Direction of the best Student Thesis Project in the Natural, Technical, and Social Fields, 1977
- Silver and Bronze Medals. National Exhibition for New Investigations of Human Movements, USSR, 1974, 1981

RESEARCH SERVICE

Ad-hoc member: NIH Study Section-Geriatrics and Rehabilitation Medicine, 2000

PUBLICATIONS

* refers to invited publications

1. **Aruin A**, Shiratori T. Anticipatory postural adjustments while sitting: the effects of different leg supports, Experimental Brain Research, 151: 46-53 (2003)
2. **Aruin A.**, Hanke T, Sharma A. Base of support feedback in gait rehabilitation. International Journal of Rehabilitation Research, (2003) (In press)
3. **Aruin A.** The effect of changes in the body configuration on anticipatory postural adjustments, Motor Control, 7: 264-277 (2003)
4. **Aruin A**, Mayka M, Shiratori T. Could a motor action that has no direct relation to expected perturbation be associated with anticipatory postural adjustments? Neuroscience Letters, 341: 21-24 (2003)
5. ***Aruin A.** The organization of anticipatory postural adjustments. Journal of Automatic Control, 12: 31-37 (2002)
6. Slijper H., Latash M., Rao N. **Aruin A.** Task specific modulation of anticipatory postural adjustments in individuals with hemiparesis, Clinical Neurophysiology, 113: 642-655 (2002).
7. Rodriguez G, **Aruin A.** The effect of shoe wedges and shoe lifts on symmetry of stance and weight bearing in hemiparetic individuals, Archives of Physical Medicine and Rehabilitation, 83: 478-483 (2002).
8. ***Aruin A.** The biomechanical foundations of a safe labor environment: Bernstein's vision in 1930, Motor Control, 6: 1-18 (2002).
9. **Aruin A.**, Shiratori T, Latash M. The role of action in postural preparation for loading and unloading in standing subjects, Experimental Brain Research, Vol 138: 458-466 (2001).
10. **Aruin A.**, Ota T, Latash M. Anticipatory postural adjustments associated with lateral and rotational perturbations during standing, Journal of Electromyography and Kinesiology, Vol 11: 39-51 (2001).
11. **Aruin A.** Simple lower extremity two-joint synergy, Perceptual and Motor Skills, 92:563-568 (2001).

12. **Aruin A.**, Sharma A, Larkins R, Chaudhuri G. Knee position feedback: its effect on management of pelvic instability in a stroke patient, Disability & Rehabilitation Vol. 22:690-692 (2000).
13. Chaudhuri S., **Aruin A.** Dynamic postural control in individuals with hemiparesis: the effect of compelled weight shift, Archives of Physical Medicine and Rehabilitation, Vol. 81: 1498-1503 (2000).
14. ***Aruin A.S.** Sports after Amputation. The Encyclopedia of Sports Medicine: Biomechanics in Sport. Blackwell Science/International Olympic Committee Book, p.637-650 (2000).
15. **Aruin A.**, Hanke T, Chaudhuri G, Harvey R, Rao N. Compelled weight bearing in patients with hemiparesis following stroke: the effect of a lift insert and goal-directed balance exercise, Journal of Rehabilitation Research and Development, Vol. 37:65-72 (2000).
16. Rao N., **Aruin A.S.** The effect of ankle foot orthosis on balance impairment, Journal of Prosthetics and Orthotics, 11:15-19 (1999).
17. Latash M.L., **Aruin A.S.**, V.M. Zatsiorsky. The basis of a simple synergy: reconstruction of joint equilibrium trajectories during unrestrained arm movements, Human Movement Science, 18: 3-30 (1999).
18. **Aruin A.S.**, Forrest W.R., Latash M.L. Anticipatory postural adjustment in conditions of postural instability, Electroencephalography and Clinical Neurophysiology, 109: 350-359 (1998).
19. **Aruin A.S.**, Nicholas J.J., Latash M.L. Anticipatory postural adjustments during standing in below the knee amputees, Clinical Biomechanics, 12: 52-59 (1997).
20. **Aruin A.S.**, Almeida G.L. A coactivation strategy in anticipatory postural adjustment in persons with Down syndrome, Motor Control, 2: 178-191 (1997).
21. **Aruin A.S.** Adaptive changes in postural reactions after unilateral leg amputation, Behavioral and Brain Science. 19: 68-69 (1996).
22. **Aruin A.S.**, Latash M.L. Anticipatory postural adjustments during self-initiated perturbations of different magnitude triggered by standard motor action, Electroencephalography and Clinical Neurophysiology, 101: 497-503 (1996).

23. **Aruin A.S.**, Almeida G.L., Latash M.L. Organization of a simple two-joint synergy in individuals with Down syndrome, American Journal of Mental Retardation 101:256-268 (1996).
24. **Aruin A.S.**, Neyman I., Nicholas J.J., Latash M.L. Are there deficits in anticipatory postural adjustments in Parkinson's disease? NeuroReport, 7: 1794-1796 (1996).
25. **Aruin A.S.** & M. L. Latash The role of motor action in anticipatory postural adjustments studied with self-induced and externally triggered perturbations, Experimental Brain Research, 106: 291-300 (1995).
26. Latash M.L., **Aruin A.S.** & Shapiro M. B. The relation between posture and movement: a study of a simple synergy in a two-joint task, Human Movement Science, 14: 79-107 (1995).
27. Shapiro M.B., **Aruin A.S.** & Latash M.L. Velocity-dependent activation of postural muscles in a simple two-joint synergy, Human Movement Science, 14: 351-369 (1995).
28. **Aruin A.S.** & M. L. Latash. Directional specificity of postural muscles in feed-forward postural reactions during fast voluntary arm movements, Experimental Brain Research, 103: 323-332 (1995).
29. Latash M.L., **Aruin A.S.**, Neyman I, Nicholas J.J. & Shapiro M.B. Feed-forward postural adjustments in a simple two-joint synergy in patients with Parkinson's disease, Electroencephalography and Clinical Neurophysiology, 97: 77-89 (1995).
30. Latash M.L., **Aruin A.S.**, Neyman I. & Nicholas J.J. Anticipatory postural adjustments during self-inflicted and predictable perturbations in Parkinson's disease, Journal of Neurology, Neurosurgery & Psychiatry, 58: 326-334 (1995).
31. Almeida G.L., **Aruin A.S.** & Latash M.L. Organization of a simple, two-joint synergy in individuals with Down syndrome, Brazilian International Journal of Adapted Physical Education Research, 1: 141-142 (1994).
32. ***Aruin, A.S.** Biomechanical foundations of human environmental design, Teorija i Praktica Fizicheskoj Kulturi 1: 20-23. (In Russian) (1993).
33. **Aruin A.S.**, Almeida G.L. & Latash M.L. Anticipatory postural adjustments during predictable and self-inflicted perturbations in Down syndrome, Brazilian International Journal of Adapted Physical Education Research 1: 146-147 (1994).
34. **Aruin, A.S.** Biomechanics of hard physical work, Modern Problems of Biomechanics, 7:

195-211 (1993).

35. Mirtov, J.N., **Aruin, A.S.** New Keyboard: A collection of single control movements. In: Ergonomics and Design of Robotics. pp.43-52, Moscow: Transactions of VNIITE, v.39 (1990).
36. ***Aruin, A.S.** Computer-aided design of the work place. Kiev: Znanie (in Russian) (1990).
37. **Aruin, A.S.**, Zatsiorsky, V.M. & Potjemkin, B.A. Damping of dynamic loads during locomotion. Modern Problems of Biomechanics, 6: 63-78. (1989).
38. **Aruin, A.S.**, Zatsiorsky, V.M., & Prilutsky, B.I. Arms of forces and elongation of the lower extremity muscles at various values of joint angles, Archives of Anatomy, Histology, and Embryo, 6:52- 55 (1988).
39. ***Aruin A.S.** The truth about women's shoe heels, Engineering for youth, 3: 26-28 (in Russian)(1988).
40. Mirtov, J.N., **Aruin, A.S.**: Ergonomic principles of elaboration of an alphanumeric keyboard. pp. 1-27, Moscow: Transactions VINITI, v. 6972 (in Russian) (1988)
41. **Aruin, A.S.**, Prilutsky, B.I. Human body simulation in computer-aided design of workstations, Biology of Sport. 5, Suppl. 1: 199-206 (1988).
42. **Aruin, A.S.**, Zatsiorsky, V.M. & Prilutsky, B.I. The "biomechanical" method used for determining the arms of muscular force, In: B. Johnson (Ed.) Biomechanics Volume X-B, 1117-1121. Human Kinetics Publishers, Champaign, IL (1987).
43. **Aruin, A.S.**, Zatsiorsky, V.M. Perspectives on Development of Ergonomical Biomechanics. Kiev: Znanie (in Russian) (1987)
44. **Aruin, A.S.**, Prilutsky, B.I. Dependence of lengthening of the triceps surae muscle on knee and joint angles, Human Physiology, 13: 105-109 (1987).
45. *Zatsiorsky, V.M., **Aruin, A.S.** People on the computer screen, Science and Life, 8:54-57 (1987).
46. **Aruin, A.S.**, Zatsiorsky, V.M., Koretsky, A.V. Investigation of shock absorption properties of shoes using vibration tests, Kozevenno-Obuvnaja Promislenost 4:22-23 (in Russian) (1987).
47. **Aruin, A.S.**, Aktov, A.V. & Koretsky, A.B. Shock absorption during locomotions,

In: Trends in Human Biomechanics: Research and Application in Medicine and Surgery, 32-38, Riga: LNIITO (in Russian) (1986)

48. ***Aruin, A.S.** Table according to the height, Health, 11: 29-32, (in Russian), (1986).
49. **Aruin, A.S.**: Biomechanics of computer-aided design of workstations. Automation of design of radioelectronic equipment. 3: 81-83 (in Russian) (1986).
50. Zatsiorsky, V.M., **Aruin, A.S.** Ergonomic biomechanics, Science and Life 3:14-19 (1985).
51. ***Aruin, A.S.** How to not get tired while cooking, Health, 11: 27-28, (in Russian), (1985).
52. **Aruin, A.S.**, Prilutsky, B.I. The relationship of biomechanical properties of muscles to their ability to utilize elastic deformation energy, Human Physiology, 11: 8-12 (1985).
53. ***Aruin, A.S.** Moving without strain, Health, 3: 23-24 (in Russian), (1985).
54. Zatsiorsky, V.M., **Aruin, A.S.**, Prilutsky, B.I., & Chaknasarov, A.I. Determination of arm of the forces exerted by foot muscles using biomechanical methods, Human Physiology, 11: 616-622 (1985).
55. ***Aruin, A.S.** Lifting without strain, Health, 7: 29-31 (in Russian), (1985).
56. Zatsiorsky, V.M., **Aruin, A.S.**, Prilutsky, B.I. & Chaknasarov, A.: Arms of muscular force of the flexor muscles of the foot. Factors Limiting Increased Capacity of Athletes to Work. Moscow, 21-35 (in Russian), (1985).
57. ***Aruin, A.S.**, Salnikova L.S. How to not get tired while doing housework, Health of the People, 120:23-25 (in Greek) (1984).
58. **Aruin, A.S.**, Zatsiorsky, V.M. Biomechanical characteristics of human ankle joint muscles, European Journal of Applied Physiology, 52:400-406 (1984).
59. **Aruin, A.S.**, Zatsiorsky, V.M. Occupational biomechanics of working with a computerized workstation, Moscow: Transactions VINITI, 2599 (in Russian) (1984)
60. **Aruin, A.S.**, Zatsiorsky, V.M. Biomechanics of shoes, Moscow: Transactions VINITI, 5458 (in Russian) (1984)
61. **Aruin, A.S.**, Zatsiorsky, V.M. Ergonomic aspects of biomechanics of man-ground interaction, Moscow: Transactions VINITI, 5533 (in Russian) (1984).

62. **Aruin, A.S.**, Zatsiorsky, V.M. Occupational biomechanics of arm working movements, Moscow: Transactions VINITI, 5684 (in Russian) (1984).
63. ***Aruin, A.S.** Let's talk about walking - How do you do it? Health of the People, 120: 25-26, (in Greek) (1984).
64. **Aruin, A.S.**, Zatsiorsky, V.M. Occupational biomechanics of typing movements, Moscow: Transactions VINITI, 1483 (in Russian) (1984).
65. **Aruin, A.S.** & Zatsiorsky, V.M. Ergonomic biomechanics of walking and running. Moscow: GZOLIFK (in Russian) (1983).
66. Zatsiorsky, V.M., **Aruin, A.S.**, Selujanov, V.N. Mass geometry of the human body (Part I), Teorie und Praxis der Korper Kultur, 6: 416-423 (in German) (1982).
67. Zatsiorsky, V.M., **Aruin, A.S.**, Selujanov, V.N. Mass geometry of the human body (Part II), Teorie und Praxis der Korper Kultur, 7: 533-541 (in German) (1982).
68. Raitsin, L.M., **Aruin, A.S.**, Poltorapavlov, N.V. Method for investigating characteristics of movement of athletes, Teorija i Praktica Fizitjeskoi Kulturi, 12:51-52 (in Russian) (1981).
69. Zatsiorsky, V.M, **Aruin, A.S.**, Raitsin, L.M. & Panovko, G.J. The determination of the equivalent characteristics of the ankle joint muscles using vibration tests. In: G. Bianchi, K. Frolov & A. Oledzki (Eds.) Man Under Vibration: Suffering and Protection, 166-175. Amsterdam, Elsevier Scientific Publishing (1981).
70. Raitsin, L.M., **Aruin, A.S.**, & Balachnichev, V.V. Utilization of optical quantum generators (lasers) for controlling of sports technique, Teorija i Praktica Fizitjeskoj Kulturi, 7:49-51 (in Russian) (1980).
71. **Aruin, A.S.**, Prilutsky, B.I., Raitsin, L.M., & Saveljev, I.A. Biomechanical properties of the muscles and efficiency of movements, Human Physiology, 5: 426-434 (1979).
72. **Aruin, A.S.**, Zatsiorsky, V.M., Panovko, G.J., & Raitsin, L.M. Equivalent biomechanical characteristics of the ankle joint muscles, Human Physiology, 4: 862-868 (1978).
73. **Aruin, A.S.**, Zatsiorsky, V.M., Panovko, G.J., & Raitsin, L.M.: A dynamic model of the human body during vibration. Medical Cybernetics, 3: 261-263. Suchumi, Georgia (1978).
74. **Aruin, A.S.**, Zatsiorsky, V.M. Biomechanical properties of the skeletal muscles, Teorija i Praktica Fizitjeskoj Kulturi, 9: 21-35 (in Russian) (1979).

75. **Aruin, A.S.**, Zatsiorsky, V.M. Determining of damping properties of the foot, Orthopedics, Traumatology and Prosthetics, 6:85- 88 (1978).
76. **Aruin, A.S.**, Zatsiorsky, V.M. & Raitsin, L.M. Biomechanical properties of muscles of the human lower extremities, Teoriya i Praktika Fizicheskoi Kulturi, 9:8-14 (in Russian) (1977).
77. **Aruin, A.S.**, Zatsiorsky, V.M., & Raitsin, L.M. Investigation of the mechanical properties of the human lower extremity muscles. In: Frolov K (Ed.) Influence of Vibration on the Human Body, 129-132, Moscow: Nauka. (in Russian) (1977).
78. Zatsiorsky, V.M, **Aruin, A.S.**, Raitsin, L.M., Prilutsky, B.I. & Selujanov, V.N. Biomechanical characteristics of the human body. In: W. Bauman (Ed.) Biomechanics and Performance in Sports, 71-84, Schomdorf, Hofman Verlag (1977).
79. **Aruin, A.S.**, Volkov, N.I., Zatsiorsky, V.M. The effect of the elastic muscle force on the efficiency of muscle work, Human Physiology, 3: 420-426 (1977).
80. **Aruin, A.S.**, Raitsin, L.M., & Schirkovets, E.A. Method for investigation of the efficiency of muscular work, Teoriya i Praktika Fizicheskoi Kulturi, 5:21-23, (in Russian) (1976).

BOOKS & TEXTBOOKS

- Aruin, A.S.**, Zatsiorsky, V.M.: Ergonomicheskaja Biomekhanika (Occupational Biomechanics), Moscow: Mashinostroenie Publishing House, (in Russian) (1989).
- Aruin, A.S.**, Zatsiorsky, V.M. & Prilutsky, B.I.: Morphometry of Muscles. Moscow: GZOLIFK. (in Russian) (1988)
- Aruin, A.S.**, Zatsiorsky, V.M.: Ergonomic Biomechanics of Exercise and Sport Science Moscow: GZOLIFK. (in Russian) (1985)
- Zatsiorsky, V.M., **Aruin, A.S.**, Selujanov, V.N.: Biomechanik des Menschlichen Bewegungsapparates. Berlin: Sportverlag (in German) (1984).
- Zatsiorsky, V.M., **Aruin, A.S.**, Selujanov, V.N.: Biomechanics of the Human Musculoskeletal System. Moscow: Fizkultura i Sport, (in Russian) (1981).
- Aruin, A.S.** & Zatsiorsky, V.M.: Biomechanical Properties of Skeletal Muscles and Tendons. Moscow: GZOLIFK, (in Russian) (1980).

CONFERENCE PAPERS

- Shiratori.T, Aruin.A.S. Anticipatory postural adjustments associated with rotational perturbations: standing on fixed and free rotating support. International Conference "Progress in Motor Control" 2003, 116, Caen, France, (2003)
- Aruin A. Development of new technologies for motor rehabilitation. UIC Bioengineering Department Seminar, November 15, 2002.
- Aruin A. Anticipatory postural adjustments: What we know and what we don't. International Congress Movement, Attention & Perception 2002, 38. Poitiers, France, (2002).
- Aruin A., Chaudhuri G., Sharma A. Step width feedback in post stroke gait rehabilitation Improving Quality of Life through Applied Research. MRH Research Symposium 2002, Wheaton, IL (2002).
- Aruin A., Rao N., Latash M., Slijper H. Modulation of anticipatory postural adjustments in individuals with hemiparesis. Rush University Forum for Research and Clinical Investigation 2002, 29, Chicago, IL (2002).
- Aruin A. Compelled weight bearing in stroke rehabilitation: International Conference "From Basic Motor Control to Functional Recovery II", 393-402, Varna, Bulgaria, (2001).
- Aruin A, The effect of changes in the angular position of the upper body on anticipatory postural: Proceedings of the 11th Annual Meeting of the Society of Neural Control of Movement, B-09, Seville, Spain (2001)
- Aruin A.S., Shiratori T., Latash M.: The role of action in the generation of anticipatory postural adjustments in standing subjects. Abstracts of the 30th Annual Meeting Society for Neuroscience, Volume 30, Part 1, p.168, New Orleans, LA (2000).
- Aruin A, Grip forces responses to changes in the provision of support: Proceedings of the 24th Annual Meeting of the American Society of Biomechanics, 153-154, Chicago (2000)
- Aruin A, Support-related grip-force adjustments in individuals with hemiparesis: 10th Annual Meeting of the Society of Neural Control of Movement, V1, (2000)
- Aruin A, Sharma A. Extrinsic feedback in gait rehabilitation of individuals with hemiparesis. Rush University Forum for Research and Clinical Investigation 2000, 31, Chicago, IL (2000)

Rodriguez G., Aruin A. The effect of the angled shoe on the symmetry of weight bearing in hemiparetic patients. Rush University Forum for Research and Clinical Investigation 2000, 30, Chicago, IL (2000).

Aruin A, Chaudhuri G, Hanke T, Harvey R, Rao N. Compelled weight bearing in stroke patients: The effect of lift insert and goal directed balance exercises. International Conference "Progress in Motor Control -II", 34, University Park, PA (1999).

Aruin A, Hanke T, Sharma A. Step width feedback in the rehabilitation of stroke patients: International Conference "From Basic Motor Control to Functional Recovery", 458-462, Varna, Bulgaria, (1999).

Aruin A, The effect of a posterior support on anticipatory postural adjustments: 9th Annual Meeting of the Society of Neural Control of Movement, S1, (1999).

Aruin A.S., M.L. Latash. The effect of magnitude of perturbation on anticipatory postural adjustments. Rush University Research Forum, 174, Chicago, IL (1998).

Aruin A.S., Forrest W.R. & M.L. Latash. Anticipatory postural adjustments in conditions of postural instability. Rush University Research Forum 1998, 174, Chicago, IL (1998).

Sharma A, Hanke T., & Aruin A.S. Restoration of gait in hemiparetic patient by feedback training with step width monitor. Symposium "Advances in Motor Rehabilitation", 17, Lisle, IL 1998.

Shiratori T, Aruin A., & Latash M. Anticipatory phase of step initiation in Parkinson's disease. Symposium "Advances in Motor Rehabilitation", 18, Lisle, IL 1998.

Latash M, Aruin A., Zatsiorsky V. Joint equilibrium trajectories during multi-joint movements. NASPSA Conference, 35, St. Charles, IL (1998).

Aruin A.S. Anticipatory postural adjustments in health and disease. III International Congress of Motor Rehabilitation, Campinas, Brazil, October 5-8, 1998, Abstract published in: FISIOTERAPIA, 8 (1998).

Latash M.L. & Aruin A.S.: Anticipatory postural adjustments and equilibrium-point hypothesis of motor control. NASPSA. Journal of Sport & Exercise Psychology, 18, 52 (1996).

Aruin A.S., M.L. Latash, Neyman I. & Nicholas J.J.: About the reason for lack of anticipatory postural adjustments in Parkinson's disease. Rush University Research Forum, 105, Chicago, IL (1996).

Latash M.L, Aruin A.S.: Reconstruction of joint equilibrium trajectories during unrestrained

- arm movements. Abstracts of the 26th Annual Meeting Society for Neuroscience, 1636 Miami, FL (1996).
- Aruin A.S., F. Davis, D. Stefoski & Nicholas J.J.: Walking patterns in multiple sclerosis. Rush University Research Forum, 99, Chicago, IL (1996).
- Latash M.L, Aruin A.S., Neyman I & J.J. Nicholas: Feed-forward postural control in Parkinson's disease. Abstracts of the 4th International Congress of Movement Disorders, 406, Vienna, Austria, (1996).
- Aruin A.S. & Latash M.L.: The effects of postural stability on anticipatory postural adjustments. Proceedings of the 20th Annual Meeting of the American Society of Biomechanics, 169-170, Atlanta, GA (1996).
- Latash M.L, Aruin A.S.: Reconstruction of joint equilibrium trajectories during unrestrained arm movements. Abstracts of the 26th Annual Meeting Society for Neuroscience, 1636 Miami, FL (1996).
- Aruin A.S. & Latash M.L. Anticipatory postural control in conditions of postural instability. Proceedings of the International Conference "Bernstein's Traditions in Motor Control", 27. University Park, PA (1996).
- Aruin A.S., Latash M.L. & Nicholas J.J.: Postural adjustments in standing of below knee amputees associated with perturbations Abstracts of the 12th Annual Scientific Symposium of Rush University, 99, Chicago, IL (1995).
- Nicholas J.J., Aruin A.S. & Latash M.L.: Changes in moments of force of proximal leg muscles after below knee amputation Abstracts of the 12th Annual Scientific Symposium of Rush University, 100, Chicago, IL (1995).
- Aruin A.S. & Latash M.L.: Unstable posture and anticipatory adjustment during load dropping. Abstracts of the 12th Annual Scientific Symposium of Rush University, 101, Chicago, IL (1995).
- Aruin A.S. & Latash M.L.: The role of the prime muscle group in feed-forward postural adjustment during velocity independent perturbations. Abstracts of the 12th Annual Scientific Symposium of Rush University, 102, Chicago, IL (1995).
- Aruin A.S., G. Almeida & Latash M.L.: Feed-forward postural reactions in Down syndrome in a two-joint motor task. Abstracts of the 12th Annual Scientific Symposium of Rush University, 103, Chicago, IL (1995).
- Aruin A.S., G. Almeida & Latash M.L.: Do predictable and self-inflicted perturbations

necessitate anticipatory postural adjustments in Down syndrome? Abstracts of the 12th Annual Scientific Symposium of Rush University, 104, Chicago, IL (1995).

Aruin A.S., Latash M.L., Nicholas J.J., F. Davis & D Stefoski: Portable device for examination of gait in multiple sclerosis patients. Abstracts of the 12th Annual Scientific Symposium of Rush University, 105, Chicago, IL (1995).

Aruin A.S. & Latash M.L.: Motor action and predictability of perturbation in anticipatory postural adjustments. 19th Annual Meeting of the American Society of Biomechanics, 59-60, Stanford, CA (1995).

Latash M.L., Aruin A.S., Neiman I, & Nicholas J.J.: Feed-forward postural reactions in patients with Parkinson's disease in a two-joint tasks. Conference in Biomechanics dedicated to the memory of N. A. Bernstein Vol. 1, p. 209, Gorkii, Russia (1994).

Latash M.L., Aruin A.S., Neyman I, Nicholas J.J., & Shapiro M.B.: Feed-forward postural control in Parkinson's disease. Abstracts of the 11th Annual Scientific Symposium of Rush University, 109, Chicago, IL (1994)

Aruin, A.S., Nicholas J.J., Gottlieb G.L., Lee K.C., & Latash M.L.: Postural adjustments during dropping and catching weights. Abstracts of the 11th Annual Scientific Symposium of Rush University, 107, Chicago IL (1994).

Aruin A.S., Latash M.L, Shapiro M.B.: Polyfunctionality of postural muscles in feed-forward postural reactions. Abstracts of the 11th Annual Scientific Symposium of Rush University, 108, Chicago, IL (1994).

Shapiro M.B., Aruin A.S., & Latash M.L.: EMG patterns during fast movements in a joint of a two-joint limb segment. Abstracts of the 11th Annual Scientific Symposium of Rush University, 21, Chicago, IL (1994).

Latash M.L., Aruin A.S., Shapiro M.B., Neyman I, Nicholas J.J.: Feed-forward postural control in multi-joint movements. Abstracts of the International Conference "Neural Prostheses: Motor System IY", 21. Columbus, OH (1994).

Shapiro M.B., Aruin A.S., Latash M.L.: Muscle activation patterns during fast voluntary movements in a joint of a two-joint limb segment. Abstracts of the International Conference "Neural Prostheses: Motor System IY", 21. Columbus, OH (1994).

Aruin A.S. & Latash M.L.: Directional specificity of postural muscles during fast arm movements. Proceedings of the 18th Annual Meeting of the American Society of Biomechanics, 169-170, Columbus, OH (1994).

- Shapiro M.B., Aruin A.S., Latash M.L.: Postural synergies during fast movements in a joint of two-joint limb segment. Proceedings of the 18th Annual Meeting of the American Society of Biomechanics, 212. Columbus, OH (1994).
- Aruin A.S., Latash M.L., Neyman I. & Nicholas J.J.: Postural adjustment during wrist and elbow movements in patients with Parkinson's disease. Abstracts of the 24th Annual Meeting Society for Neuroscience, 1779, Miami, FL (1994).
- Almeida G.L., Aruin A.S. & Latash M.L.: Organization of a simple, two-joint synergy in individuals with Down syndrome. In: Latash M.L. (Ed.) "Motor Control in Down Syndrome - II, 10-15, Rush University, Chicago, IL (1994).
- Aruin A.S., Almeida G.L. & Latash M.L.: Anticipatory postural adjustments during predictable and self-inflicted perturbations in Down syndrome. In: Latash M.L. (Ed.) "Motor Control in Down Syndrome-II", 28-33, Rush University, Chicago, IL (1994).
- Aruin, A.S., Nicholas J.J., Gottlieb G.L., Lee K.C., & Latash M.L.: Anticipatory reactions during dropping and catching weights. Proceedings of the American Society of Biomechanics, 55-56, Iowa (1993).
- Aruin, A.S., Nicholas J.J., Gottlieb G.L., & Latash M.L.: Anticipatory postural reactions while catching and dropping weights. Abstracts of the 55th Annual Assembly of American Academy of Physical Medicine & Rehabilitation, 112, Miami, FL (1993).
- Aruin, A.S.: Damping of the striking effect in locomotion. In Abstracts of the First World Congress on Biomechanics, San Diego CA, V. 1, 93 (1990).
- Aruin, A.S.: Biomechanics of heavy manual labor while standing. In: Proceedings of 4th All-Union Conference on Perspective of Development of Ergonomic Biomechanics, 4-31, Moscow- Sevastopol, Ukraine (1990).
- Mirtov, J.N., Aruin, A.S.: Ergonomic principles of elaboration of an alphanumeric keyboard. Ergonomics and Social Orientation of Progress. p. 110-111. Moscow (1989).
- Aruin, A.S.: Ergonomic biomechanics of manual equipment. In: Abstracts of the 4th All-Union Conference on Biomechanics of Sports, 8-10. Chernigov, Ukraine (1989).
- Mirtov J.N., Aruin, A.S.: Biomechanical and ergonomic foundations of a keyboard design. In: Transactions of the 1st All-Union Conference on Perspectives of Development of Ergonomic Biomechanics, 140-168, Moscow- Sevastopol, Ukraine (1988).
- Aruin, A.S., Prilutsky, B.I.: Optimization of arm working movements. In: Transactions of the 1st All-Union Conference on Perspectives of Development of Ergonomic

- Biomechanics, 4-19, Moscow- Sevastopol, Ukraine (1988).
- Kopilov D.B. Aruin, A.S.: Biomechanical approach in computer-aided design of the work place. In: Transactions of the 1st All-Union Conference on Perspectives of Development of Ergonomic Biomechanics, 72-81, Moscow- Sevastopol, Ukraine (1988).
- Mirtov, J.N., Aruin, A.S.: A new alphanumeric keyboard for the personal computer. Ergonomics of External Devices for Computers. Abstracts of the All-Union Conference, 91-92. Orel, USSR (1988).
- Aruin, A.S.: Ergonomical aspects in the biomechanics of interaction with supports. 5th International Symposium of Biomechanics in Sport, Athens, Greece (1987).
- Aruin, A.S., Zatsiorsky, V.M. & Prilutsky, B.I.: Extension of the human lower extremity muscles as a function of a joint angle. Proceeding of Conference Dedicated to 150th Birthday of Lesgaft, 161. Leningrad, USSR (1987).
- Aruin, A.S. & Sazonov, B.P.: The effect of different working postures on loading of the lower back, Problems of Biomechanics in Sports. All-Union Conference, 8-9, Moscow (1987).
- Aruin, A.S., Prilutsky, B.I.: Prediction of changes in length of different heads of the triceps surae muscle using the angles in the ankle and knee joints. 11th International Congress of Biomechanics, 16. Amsterdam, Netherlands (1987).
- Aruin, A.S., Zatsiorsky, V.M., Koretsky, A.V., Potjemkin, B.A.: Investigation of absorbing properties of shoes and their influence on the human body. 5th National Congress on Theoretical and Applied Mechanics, 349. Varna, Bulgaria (1985).
- Aruin, A.S.: Modern problems of ergonomic biomechanics. Proceeding of the 30th International Wissenschaftliher Kollokvium, Technische Hochschule Ilmenau, 187-190. Ilmenau, Germany (1985).
- Aruin, A.S.: Biomechanical foundation of development of equipment for personal protection. All-Union Conference Health and Professional Ability of a Human, 24. Moscow, (1985).
- Aruin, A.S., Zatsiorsky, V.M. & Prilutsky, B.I.: The "biomechanical" method used for determining the arms of muscular forces. 10th International Congress of Biomechanics, 16. Umea, Sweden (1985).
- Aruin, A.S.: Biomechanical aspects of robotics. Proceeding of the 28th International Wissenschaftliher Kollokvium Technische Hochschule Ilmenau, 241-243 Ilmenau, Germany (1983).

- Averkovich, N.V., Aruin, A.S., Beletsky.: A technique for investigation of the characteristics of movement of athletes. Electronics and Sports-VII, 121-123. Tula, USSR (1983).
- Aruin, A.S.: A method for determining spring capacities of the foot. 7th International Congress of Biomechanics, 35. Nagoya, Japan (1981).
- Aruin, A.S., Zatsiorsky, V.M., Panovko, G.J., & Raitsin, L.M.: The investigation of the biomechanical properties of the lower extremities using the vibration test. In: Problems of Biomechanics. Abstracts of the 2nd All-Union Conference.35-37, Riga, Latvia (1979).
- Aruin, A.S. & Zatsiorsky, V.M.: A method for evaluating of the spring function of the foot. In: Proceedings of the 5th All-Union Seminar Physical Methods and Problems of Metrology in Biomedical Measurements, 189-190. Moscow (1978).
- Aruin, A.S., Raitsin, L.M. & Schirkovets, E.A.: Measurements of the efficiency of muscle work. In: Proceedings of the 4th All-Union Seminar Physical Methods and Problems of Metrology in Biomedical Measurements, 162-163. Moscow (1976)
- Aruin, A.S.: Mechanical properties of the flexors of the foot. In: Abstracts of the 2nd All-Union Conference Problems of Biomechanics of Sports, 8-9. Kiev, Ukraine (1976).
- Aruin, A.S., Averkovich, N.V., & Kholoptsev, V.I.: Optimization of the educational and training processes. Physical Education in Universities. Abstracts of the All-Russian Conference, 117-118. Krasnodar, Ukraine (1976).
- Aruin, A.S.: Method of investigation of the mechanical properties of muscles. In: Proceedings of the 3rd All-Union Seminar Physical Methods and Problems of Metrology of Biomedical Measurements, 120-122. Moscow (1974).
- Aruin, A.S.: Investigation of the mechanical properties of muscles of the human lower extremities. In: All-Union Conference of Biomechanics of Sport, 18. Moscow (1974).
- Aruin, A.S., Averkovich, N.V., & Kholoptsev, V.I.: Device for training of wrestlers. Electronics and Sports-III. Abstracts of the All-Union Conference, 74-75. Leningrad, USSR, (1972).
- Aruin, A.S., Kulik, N.G., & Kholoptsev, V.I.: Digital storage of pulse. Electronics and Sports-III. Abstracts of the All-Union Conference, .52-53. Leningrad, USSR (1972).
- Aruin, A.S., Averkovich, N.V, Matchin, A.M. Device for physiological studies in sports. In: Proceedings of the All-Union Conference Theory and Practice in Designing of Devices, Apparatus, and Systems, 60-61. Moscow, USSR (1972).

SYMPOSIA

“Anticipatory postural adjustments: What we know and what we don’t.” Invited speaker at International Congress Movement, Attention & Perception, Poitiers, France, 2002.

“Anticipatory postural adjustments in health and disease”. Invited speaker at III International Congress of Motor Rehabilitation, Brazil, October 5-8, 1998.

“Simulation of the human body in computer-aided design”. Invited speaker at 1th International Symposium on Computer Simulation in Biomechanics, Warsaw, Poland, 1988.

GRANTS AWARDED

	(Direct cost)
<ul style="list-style-type: none"> ■ Modulation of anticipatory postural adjustments in individuals with Parkinson Disease. Principal Investigator (P.I.) <i>UIC, Grant from the College of Applied Health Science, 2001</i> 	\$18,000
<ul style="list-style-type: none"> ■ "The Organization of Anticipatory Postural Adjustments" <i>NIH, National Center for Medical Rehabilitation Research, 1998-2003</i> 	(P.I.) \$350,000
<ul style="list-style-type: none"> ■ “Restoration of Function in Neurological Impairment” (Network Scientist.) (W. Z. Rymer P.I.) <i>NIH, National Center for Medical Rehabilitation Research, 2000-2004</i> 	\$3,946,403
<ul style="list-style-type: none"> ■ "Step Width Feedback in Rehabilitation of Stroke Patients" (P.I.) <i>Dr. Scholl Foundation, 2000</i> 	\$20,000
<ul style="list-style-type: none"> ■ “The Effect of Ankle Foot Orthoses on Balance of Patients with Diabetic Neuropathy” <i>Marianjoy Rehabilitation Hospital and Clinics, 1999-2000</i> 	(P.I.) \$15,000
<ul style="list-style-type: none"> ■ "The Effect of Isometric Abdominal Exercises on the Effectiveness of Treatment of Low- Back Pain" <i>Marianjoy RehabLink, 1999-2000</i> 	(P.I.) \$9,000
<ul style="list-style-type: none"> ■ “Development of a Clinical Tool to Improve Motor Recovery in Patients with Step Width Maintenance Deficit” <i>Marianjoy Rehabilitation Hospital and Clinics, 1999</i> 	(P.I.) \$27,200
<ul style="list-style-type: none"> ■ “Bimanual Coordination in the Neurologically Impaired” <i>Marianjoy Rehabilitation Hospital and Clinics, 1999-2000</i> 	(P.I.) \$6,000

- "Compelled Weight Bearing in Stroke Patients" (P.I.) \$35,500
Marianjoy Rehabilitation Hospital and Clinics, 1998-1999
- "Anticipatory Postural Reactions in Below Knee Amputees" (P.I.) \$6,000
Rush University Committee on Research, 1995
- "Biomechanical Foundations of Human Environmental Design" (P.I.) 219,000
Russian State Committee for Higher Education, 1990-1992
- "Laser Method of Measuring Athletes' Movements" (P.I.) 60,000
The Committee of Physical Education and Sports under the Council of Ministers of the USSR, 1988-1990
- "Development of Stereo-Photo Method of Recording (P.I.) 38,000
Movements"
The Committee of Physical Education and Sports under the Council of Ministers of the USSR, 1983-1984
- "Method and Apparatus for Recognition of Spoken Words" (P.I.) 60,000
The Institute of Radio Technology of the USSR Academy of Science. 1969-1970

TEACHING

- Research Principles and Experiment Design, Basic Bio-statistics. Lectures for Physical Medicine & Rehabilitation medical residents. Marianjoy Rehabilitation Hospital, *Wheaton, IL, 2003*
- Control of posture and locomotion. Graduate course. *University of Illinois at Chicago, IL, 2002*
- Biophysics. DPT course. *University of Illinois at Chicago, IL, 2002, 2003*
- Kinesiology. Lectures for graduate students. *University of Illinois at Chicago, IL, 2000, 2002*
- Biomechanics. Lectures for Physical Medicine & Rehabilitation medical residents of *Rush Medical College, Loyola University, and the Rehabilitation Foundation, Chicago, IL, 1999,*
- Research Methods. Lectures for Physical Medicine & Rehabilitation medical residents. *Rehabilitation Foundation, Chicago, IL, 1998-1999*
- Motor Control. Graduate course (substitute). *Pennsylvania State University, PA, 1996*
- Kinesiology. Lectures for Physical Medicine & Rehabilitation medical residents, *Rush-Presbyterian St. Luke's Medical Center, Chicago, IL, 1995*
- Ergonomic Biomechanics. *Central Institute of Physical Culture, USSR, 1987-1991*

- Occupational Biomechanics. *Institute of Aeronautical Engineering and Institute of Electronics and Automation*. USSR, 1986-1991
- Biomechanical Aspects of Ergonomics. *Moscow Institute of Electronic Engineering, USSR*, 1985 –1990
- Medical and Biological Foundations of Exercise and Sport Science. *Moscow Institute of Electronic Engineering. USSR*, 1979 -1992
- Biomechanics. Graduate Course. *Central Institute of Physical Culture, USSR*, 1973-1978

STUDENT SUPERVISION

- MS Thesis committee chairman, University of Illinois at Chicago, IL, 2002- present.
- Ph.D. Thesis committee member, Pennsylvania State University, PA, 2000-2002
- MS Thesis committee member, University of Illinois at Chicago, IL, 2000- present
- Supervisor of Physical Medicine & Rehabilitation medical residents working on research projects, 1998 – present
- Consultant for the Northern Illinois University physical therapy and electrical engineering students on research, 1997-2000
- Supervised/advised a number of graduate and undergraduate students working on master's or doctoral theses and research projects (1976-1992). Two undergraduate students received National Gold Medals for Best Student Thesis Project in the Natural, Technical, and Social Fields in 1977

PROFESSIONAL SERVICES

Program Committees

- Chairman of the Institutional Review Board, Marianjoy Rehabilitation Hospital since 2003
- Member of the Executive Committee since 2000
- Promotion & Tenure Committee since 2000
- Member of the Education Committee 1998 to 2000
- Member of the Scientific Review Committee 1997 to present
- Member of the Master & Doctoral Thesis Committees 1983-1992

Conferences & Symposia Organizer

- Member of the Organizing Committee. Third International Conference “From Basic Motor Control to Functional Recovery” Varna, Bulgaria, September 20-25, 2003
- Section Chair. Second International Conference “From Basic Motor Control to Functional Recovery” Varna, Bulgaria, September 9-15, 2001
- Section Chair. International Conference “From Basic Motor Control to Functional Recovery” Varna, Bulgaria, September 22-26, 1999
- Chairman of the Medical Resident's Symposium on Research in Physical Medicine &

Rehabilitation. Wheaton, Illinois, December 16, 1998

- Co-Chairman of the Symposium “Advances in Motor Rehabilitation”, Lisle, Illinois, June 19, 1998
- Chairman of the Organizing Committee of the 5th All-Union Conferences “Perspective of Development of Ergonomic Biomechanics”, Sevastopol, Ukraine, 4-8 October, 1990
- Chairman of the Organizing Committee of the 4th All-Union Conferences “Perspective of Development of Ergonomic Biomechanics”, Sevastopol, Ukraine, 3-7 October, 1989
- Section Chair, 1st International Symposium on Computer Simulation in Biomechanics, Warsaw, Poland, 1988
- Vice-Chairman of the Organizing Committee of the 1st, 2nd, and 3rd All-Union Conferences “Perspectives of Development of Ergonomic Biomechanics”, Sevastopol, Ukraine, 1986, 1987, 1988

Professional Societies

- Society for Neuroscience 1999 to present
- Neural Control of Movements 1999 to present
- American Society of Biomechanics 1994 to present
- Scientific Council for Biomechanics of Russian Academy of Sciences 1986 to present

Ad-Hoc Reviewer

- Neuroscience Letters, 2003
- Journal of Motor Behavior, 2003
- Journal of Neurophysiology, 2003
- Experimental Brain Research, 2001, 2002, 2003
- Motor Control, 1996, 1997, 1998, 2000, 2002, 2003
- Muscle & Nerve, 2000, 2001
- Perceptual and Motor Skills, 1998
- Medicine and Science in Sport and Exercise, 1995
- Theory and Practice in Physical Education, 1989-1990
- Human Physiology, 1988 - 1991

INVENTIONS AND PATENTS

1. Aruin A.S. Device and method for motor rehabilitation. UIC Invention Disclosure # 2001- CV47 (2001)
2. Aruin, A. S. Apparatus and method for assessment and feedback training of step width coordination. USA Patent # 6,234,982 (2001)
3. Aruin, A. S., Nicholas J. J. Knee and hip exercise device and method. USA Patent #

6,056,675 (2000)

4. Aruin, A. S. Leg exerciser and method. USA Patent # 5,879,275 (1999).
5. Aruin, A. S., Raitsin L. M. Method and device for exercising the abdominal muscles. USA Patent # 5,823,913 (1998).
6. Aruin, A. S. Pedal assembly. PSU Invention Disclosure #96-1637.
7. Aruin, A. S. Leg exerciser. PSU Invention Disclosure #96-1591.
8. Aruin, A. S. Foot, ankle, and lower leg exercise system. PSU Invention Disclosure #95-1548.
9. Aruin, A.S., Gerasimenko, V.G., Tuleubaeva, G.F. & Shmeleva E.L. Device for providing stability of the foot. Patent USSR # 1782573.
10. Aruin, A.S., Gerasimenko, V.G., Tuleubaeva, G.F. & Shmeleva, E.L. Device for training of the disabled persons. Patent USSR # 1761142.
11. Aruin, A.S., Farber, B.S., Tcherbakov, N.N. & Shmeleva, E.L. Special pliers. Patent USSR # 1731620.
12. Aruin, A.S., Gerasimenko, V.G., Farber, B.S. & Tuleubaeva, G.F. Device for treatment of the vascular edema. Patent USSR # 1731215.
13. Aruin, A.S., Mirtov, J.N., Shmeleva, E.L. Keyboard. Patent USSR # 1705127.
14. Aruin A.S., Farber B.S., Gerasimenko V.G. & Shmeleva E.L. Device for massage of the extremities. Patent USSR #1629059.
15. Aruin, A.S., Gerasimenko, V.G. & Farber, B.S. Hand massager. Patent USSR # 1627178.
16. Aruin, A.S., Farber, B.S., Gadatelev, A., Shmeleva, E.L. Method of fabrication of handles. Patent USSR # 1613316.
17. Aruin, A.S., Gerasimenko, V.G. & Farber, B.S. Hoop for massage. Patent USSR # 1595515.
18. Aruin, A.S., Prilutsky, B.I. Method for determining human muscle stiffness and viscosity. Patent USSR #1586680.

19. Aruin, A.S., Farber, B.S. & Nikitin, N.G. Orthopedic inner sole. Patent USSR # 1570727.
20. Aruin, A.S., Zatsiorsky, V.M. Device for measuring the human body volume, Patent USSR # 1551348.
21. Mirtov, J.N., Aruin, A.S. Keyboard. Patent USSR # 1518144.
22. Aruin, A.S., Zatsiorsky, V.M. Method for determining the human body volume. Patent USSR # 1491448.
23. Aruin, A.S., Zatsiorsky, V.M. Method of lowering of fatigue of an operator. Patent USSR # 1419694.
24. Aruin, A.S., Zatsiorsky, V.M. Method for decreasing the load on the upper body. Patent USSR # 1393418.
25. Aruin, A.S., Zatsiorsky, V.M. Operator's workstation, Patent USSR # 1335277.
26. Aruin, A.S. Device for measuring the parameters of the foot relocation. Patent USSR # 1331489.
27. Aruin, A.S., Zatsiorsky, V.M. Method for determination of biomechanical characteristics of the musculoskeletal system. Patent USSR # 1327877.
28. Aruin, A.S. Foot arch sole Patent USSR # 1316670.
29. Aruin, A.S., Zivotchenko, V.D., Nikitin, N.G. & Farber, B.S. System for determining the moments of the forces in an extremity. Patent USSR # 1286161.
30. Aruin, A.S., Prilutsky, B.I., Chaknazarov, A.I. Device for measuring changes in length of muscles. Patent USSR # 1258377.
31. Aruin, A.S., Prilutsky, B.I. Method of determination of changes in the muscle length Patent USSR 1222247.
32. Aruin, A.S., Zatsiorsky, V.M. & Potjemkin, B.A. Method of determining the damping ability of an object. Patent USSR # 1208490.
33. Aruin, A.S. Method of determining the damping ability of an object. Patent USSR # 137372.
34. Aruin, A.S., Raitsin, L.M. & Prilutsky, B.I. Method of assessment of biomechanical

- characteristics of muscles. Patent USSR# 1168193.
35. Krilov, V.B., Lyashukova, S.M., Maksimov, I.B. & Aruin, A.S. Device for monitoring the movement of airplanes and transporting vehicles at airports. Patent USSR # 1067759.
 36. Zatsiorsky, V.M., Raitsin, L.M., Balachnitchev, V.V. & Aruin, A.S. Device for measuring the characteristics of stride. Patent USSR # 754727
 37. Aruin, A.S., Averkovich, N.V., & Kholoptsev, V.I. Device for recording rule-breaking phase in athletic walking. Patent USSR # 748471.
 38. Zatsiorsky, V.M., Aruin, A.S., Raitsin, L.M. & Balachnitchev, V.V. Device for measurement of the temporal and linear characteristics of stride. Patent USSR #705978.
 39. Aruin, A.S., Balachnitchev, V.V., Zatsiorsky, V.M. & Raitsin, L.M. Device for control of the crossing of a light border. Patent USSR # 669371.
 40. Aruin, A.S. Device for measuring the dimensions of the foot under pressure. Patent USSR #668678.
 41. Zatsiorsky, V.M. & Aruin, A.S. Method for the examination of the foot. Patent USSR #544842
 42. Aruin, A.S., Averkovich, N.V. & Kholoptsev, V.I. Stride-meter. Patent USSR # 469053