JSPO

The Japanese Society of Prosthetics and Orthotics

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Developing more advanced technology.
Furthering education on
prosthetics and orthotics.

For the growth of everyone involved in prosthetics and orthotics

The Japanese Society of Prosthetics and Orthotics (JSPO) engages in education, training, and academic activities aimed at contributing to the improvement of academic culture and the welfare of persons with disabilities by implementing projects related to advancing technology and disseminating knowledge in areas such as prosthetics and orthotics. The Society is also involved in disaster relief and international cooperation.

In order to effectively utilize prostheses, orthotics, and assistive equipment, it is necessary for a multidisciplinary team to correctly grasp the users' goals and demonstrate a high level of expertise. As the only platform in Japan where related multidisciplinary specialists can study together and exchange information, the Society will continue its activities with the goal of improving the quality of prosthetics and orthotics services for patients and people with disabilities.

History of the Society

- **1968** Established as the Prosthetics and Orthotics Research Circle
- **1972** Renamed to the Japanese Society of Prosthetic and Orthotic Education, Research, and Development
- **1980** Held the 1st Research Seminar of the Japanese Society of Prosthetics and Orthotics (Shuichi Kakurai)
- **1984** Registered as an Associate Society of the Science Council of Japan (13th Session)(Rehabilitation Medicine; 7th Session)
  Renamed to the Japanese Society of Prosthetics and Orthotics, with Kokichi Tsuchiya appointed as the first President
- **1985** Held the 1st Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Kazuo Tsuchiya)
- **1990** Held the 6th Research Seminar of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Eiji Tazawa)
- **1994** Held the 10th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Shuichi Kakurai)
- **1997** Held the 13th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Masahiro Mikami)
- **2003** Held the 19th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Yoshiko Tobimatsu)
- **2013** Registered as a General Incorporated Association, with Toyoko Asami appointed as President
  Held the 29th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Toyoko Asami)
- **2020** Held the 36th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Nobuhiko Haga)
- **2022** Held the 38th Scientific Meeting of the Japanese Society of Prosthetics and Orthotics (The meeting chair: Kazuhiro Sakai)

Growth & History of Prosthetics and Orthotics

Prosthetic hands

The history of prosthetic hands is closely related to warfare. These hands have been created to enable wounded soldiers to return to battle or to perform social functions after returning to civilian life.

Post-World War II

The current active prosthetic hand system (control cable system with internal power source) was released

The late 1960s

A myoelectric prosthetic hand system that is currently used broadly overseas was developed

Myoelectricity (surface myoelectric potential) is a weak electric current generated when a muscle contracts. Myoelectric prosthetic hands use a special electrode to collect the myoelectricity and utilize it as switch for operating the motor.

Prosthetic legs

Prosthetic legs have changed from a shell structure to a skeletal structure. These legs have advanced significantly due to changes in suspension methods and weight bearing theories, and to the development of joint control methods. Today, even lower-limb amputees are able to perform high-intensity activities such as running and mountain climbing.

In particular, the evolution of socket theory and the high performance of parts such as joints and feet have contributed greatly to improving the exercise and movement capabilities of amputees.

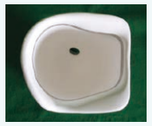
Socket design for Transfemoral Prostheses

1956

A prototype of a quadrilateral socket was brought to Japan from overseas

From 1975

The current quadrilateral suction socket spread in Japan



It became established as a standard socket for above-knee prosthetics and is still widely used clinically even today.

1985

CAT-CAM socket theory was developed overseas

1991

Use of ischial-ramal-containment sockets (IRC sockets) spread in Japan

A socket shape that considers lateral stability which is difficult to achieve with a quadrilateral socket.

Socket design for Transtibial Prostheses

1959

A PTB socket was developed to achieve full-surface contact with the stump; afterward, a PTS/KBM socket with a self-suspension function was developed

1980

A silicon liner system was developed

1987

A TSB socket developed for load-bearing purposes across the stump

A below-knee prosthetic with a silicone liner attached to the below-knee stump.

Prosthetic feet

1980

An energy storage foot was developed

The foot section features a leaf spring structure for appropriately absorbing impact from the road surface and for using that impact as a repulsive force to recover when driving off the foot.

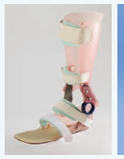
Lower-limb orthotics

1970s

Thermoplastics such as ortholene and polypropylene spread in Japan, and the use of plastic ankle-foot orthotics became widespread

1990s

Plastic ankle-foot orthotics with joints adding an ankle plantar dorsiflexion adjustment function to plastic ankle-foot orthotics became widespread



Typical plastic ankle-foot orthotics with joints.

Robotic technology

2015

Manufacture and sale of rehabilitation robots as medical equipment

Wearable robots perform functional improvement therapy for people who cannot move their bodies as they intend due to declining functions of their brain, nerves, or muscular systems. Sensors detect weak biopotential signals and enable movement according to the wearer's intention.

Prosthetic knee joint

1993

Computer-controlled knee joints were developed

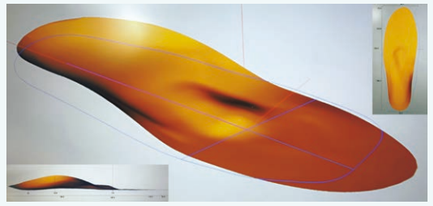
A computer controls the resistance of the fluid control device. This enables movement of the knee joint according to walking speed.

Manufacturing technology

The late 1990s

Manufacturing technology using CAD/CAM systems for prosthetics and orthotics was developed overseas and spread in Japan in the early 2000s

The introduction of 3D digital technology has reduced the physical burden on patients and improved design. Furthermore, there were expectations that digital data analysis would be used to build evidence related to production and fitting.



Technology for prosthetics and orthotics supporting the users

Myoelectric prosthetic hands

Hand with active fingers

By diversifying grip patterns and increasing the flexibility of hand joints, it is possible to reproduce the shape and function of the hand at a high level.

Robotic technology

Walking support robot

A rehabilitation robot was developed to resolve medical problems caused by wheelchair life (osteoporosis, joint contracture, etc.) and to meet the needs of paraplegics who wish to stand again. The robot makes it possible for users to stand up from a wheelchair and walk for long distances/times.

Robotic technology

Transfer support robot

A lateral transfer support robot that assists motor functions for moving and transferring at home. The robot can move forward, backward, left, and right, and the seat can be raised and lowered via a motor. Compared to a wheelchair, the risk of falling is reduced because the user can move to the side while in a sitting position without lifting their buttocks.

Lower-limb orthotics

Microprocessor-controlled knee-ankle-foot orthotics with knee joint

The knee joint uses multiple sensors to detect the user's walking and to control the movement of the knee joint. This prevents the knee from bending and enables walking with smooth control of knee motion.

Lower-limb orthotics

Carbon fiber ankle-foot orthotics with posterior strut

This ankle-foot orthotic was developed based on the concept of pursuing functionality and appearance. It features a structure with modularized foot joints and a carbon fiber posterior strut.

Multidisciplinary collaboration that supports technology

Our goal is to create a new life

One goal of rehabilitation is not to simply return the patient to their original state but to create a new life. In pursuit of that goal, a team of specialists collaborates extensively to support patients and people with disabilities.

Doctors

Final decision-making on prescriptions and fitting

Doctors are responsible for overseeing the entire team. They make final decisions on all processes leading up to the patient's return to society; for example, formulating treatment strategies, determining the appropriateness of prosthetics and orthotics, prescribing prosthetics and orthotics, and determining fit.

Prosthetists and Orthotists

Design and fitting (adjustment) of prosthetics and orthotics

Prosthetists and Orthotists design, cast, fabricate, and fit prosthetic and orthotic devices, including the selection of materials and parts. The prosthetic and orthotic devices are fitted by daily changes in the physical and psychological condition of patients.

Physical Therapists/ Occupational Therapists

Utilization of prosthetics and orthotics

Physical therapists and occupational therapists provide training utilizing the prosthetic orthotic devices, guidance on those training methods, and guidance on the wearing of the prosthesis or orthosis. It is important to conduct training by changes in the physical and psychological condition of patients.

Nurses

Operation and management of prosthetics and orthotics; physical and psychological support

Nurses work together with doctors to manage the physical/psychological conditions of patients and to support patient health. Nurses also provide training for putting on and taking off the prosthetic or orthotic device in daily life, as well as management and guidance for skin trouble, etc.

Rehabilitation Engineers

Development of prosthetic and orthotic components

Rehabilitation engineers provide scientific support for the fitting and adjustment of prosthetics and orthotics by prosthetists and training by therapists. The role of rehabilitation engineers is to research, develop, and evaluate prosthetic and orthotic parts that are suitable for patients and users, and to provide feedback to people involved in prosthetics and orthotics.

Social Workers

Support for the provision of prostheses, orthoses and assistive devices

By understanding the social environment surrounding patients and sharing information with patients and their families, social workers provide comprehensive support for applications, etc., related to prosthetics and orthotics.

For even further growth

We will continue to promote education and technological development
to support the lives and activities of all people who need prosthetics and orthotics.

Study and convey

Scientific meetings

JSPO scientific meeting is held once every year. The meeting features special lectures and educational lectures on themes selected by the meeting director. Other features are lectures by speakers invited from abroad, symposiums, and panel discussions. The specified topics are delivered, including those by invited speakers from abroad, and symposiums and panel discussions are held. JSPO members can make presentations in their respective specialized fields or listen to presentations by others. A commercial exhibition is joined by several prosthesis and orthosis producers and welfare equipment manufacturers, offering an opportunity to experience cutting-edge products firsthand. The meeting also serves as a forum for exchanging opinions with and collecting information from a variety of professionals involved in clinical research on prostheses and orthoses. A large number of prosthesis or orthosis users, students, and other non-industry people have participated in recent years.

Communicate and spread

Academic journal publication

As part of its membership service, JSPO publishes the Nihon Gishi Sougu Gakkaishi journal (ISSN: 0910-4720) [Bulletin of the Japanese Society of Prosthetics and Orthotics] four times a year. Each issue of the journal features a wide range of special articles on topics such as prostheses, orthoses, and assistive devices, as well as education, research, and overseas developments. It also includes treatises and articles contributed by JSPO members, serial lectures, reports on recent conferences, academic meetings, seminars, editorials, and other information. This journal can be read on J-STAGE (Japan Science and Technology Information Aggregator, Electronic), which is an online academic journal platform operated by the Japan Science and Technology Agency.

Learn

Research seminar

JSPO research seminar is held once every year to provide chances for various specialists related to prostheses and orthoses to learn professional knowledge and skills. Seminar topics cover state-of-the-art as well as practical knowledge and skills to promote the appropriate use of prostheses and orthoses. These topics cover wide-ranging areas of specialization, and the seminar is designed with well-balanced theories, fitting, and wearing training methods in consideration of multidisciplinary members of JSPO.

Certification system

JSPO has established a certification system as system related to continuous professional development. Persons who attend a workshop held once a year and pass the written examination are certified as either “Prosthetics and Orthotics Specialist” or as “Certified Professional by the Japanese Society of Prosthetics and Orthotics,” and we strive to improve their skills related to prosthetics and orthotics.

Other activities

JSPO also conducts other activities such as supporting the supply of prostheses and orthoses to low-income countries, collecting information from industrial countries, implementing domestic measures for discussing standards and specifications related to prosthetics and orthotics based on ISO and JIS, and examining the supply system for prosthetic and orthotics.

Organizational Chart

- General Assembly of Society Members
- Society Secretariat
- Executive Board
  - President
  - Vice-Presidents
  - Executive Board Members
- Inspector
- Standing Committees
  - General Affairs and Public Relations
    - Statutes Committee
    - Public Relations Committee
    - Internationalization Committee
    - Japan Disaster Rehabilitation Assistance Team Committee
  - Education
    - Training Committee
    - Certification System Committee
  - Academics
    - Publication Committee
    - Society Awards and Research Grants Selection Committee
    - Standardization Committee
    - Terminology Committee
    - Committee on Measures for Supply System of Prosthetics, Orthotics, Etc.
  - Ethics
    - Ethics Committee
- Special Committees
  - Scientific Meeting Committee
  - Committee for Upper Limb Prosthetic check-out protocol

Enrollment Information

If you would like to apply on the Web, please write "You want to join" in the subject line of the e-mail, write the desired membership category in the text, and send it to the following e-mail address. We will e-mail you the payment method with return credit, so please pay the admission fee and the annual membership fee for the first year.

*Admission fee and annual membership fee for the first year are paid by credit using PayPal.

The annual membership fee is as follows.
The fiscal year of the Society is from September 1st to August 31st.

	General member	Student member	Supporting member	Subscriber
Admission fee	1,000 yen	—	—	—
Annual fee	10,000 yen	4,000 yen	40,000 yen	8,000 yen

(No admission fee is required for the transition from student member to general member.)

*1 Subscribed members are limited to corporations, and participation in study groups and academic conferences is treated as non-members only by purchasing academic journals. Subscribed members purchase each academic journal volume and have nothing to do with the academic year.

*2 Those who wish to have a back number will be charged 2,000 yen for members and 3,000 yen for non-members. (Up to 9 volumes, 1,500 yen for members, 2,000 yen for non-members)

Inquiries

The Japanese Society of Prosthetics and Orthotics (JSPO) Secretariat

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