Impact of Adaptive Sports and Recreation on People with Disabilities

Rory A. Cooper, PhD
FISA/PVA Chair and Distinguished Professor
Department of Rehabilitation Science & Technology
University of Pittsburgh
Senior Career Research Scientist and Director
Human Engineering Research Laboratories
VA Rehabilitation Research & Development Service
Cooper has life back on track

By Jon Hastings

Rory Cooper was born to race. Nothing has stopped him the past 31 years — not even a semitruck in Wurzen, Germany, nearly three years ago.

Cooper was paralyzed from the mid-stomach down after the bicycle he was riding collided with a city vehicle on July 29, 1981.

And while Cooper is quick to recall the exact date of the accident, he seems far removed from the incident. The past is just that — the past.

Cooper, a 1979 graduate of San Luis Obispo High School, is more concerned with the future — which he looks upon with plenty of optimism.

The junior electrical engineering major at Cal Poly, one of only a handful of wheelchair athletes, concentrating on track and field, is trying to raise money through a newsletter to travel to Hawaii, for the National Wheelchair Games on the University of Hawaii campus. The Games are slated for June 14-19, with over 130 athletes competing.

Cooper is the current Class 3 Division wheelchair record holder in the 1,200 meters with a time of 3:36.04.

He also competes in the 400, 800 and marathons, displaying potential in just about every event.

Cooper competed on the track team at St. Joe’s for two years, specializing in the two-mile. “I was slow,” he now says of his prep time of 10:45.9.

He kept his running up in the army, competing in the all-Armed Forces team in Germany.

He said he didn’t take long to get involved in athletics after the accident. “Athletics for people in wheelchairs is as critical as part of what you lost at the physical limitations — can be overcome through athleticism,” said Cooper.

“Your physical well-being becomes more important once you have a physical disability.”

“I know of other wheelchair athletes. From what I’ve seen, even immediately after the accident, he said, “it’s not because my injury wasn’t that serious.”

Part of Cooper’s positive thinking may be a result of what a German newspaper once wrote: “This man has made me realize what I could have been.”

The publication also reported he had been killed in the accident.

“Of course I didn’t know about it, but my first reaction was what Mark Twain said: ‘If my death is greatly exaggerated,’ Cooper’s enthusiasm for life, however, isn’t exaggerated at all.

He plans to get even more involved in wheelchair athletics, both as a participant and as a consultant. In April he was responsible for organizing the Tri-City Wheelchair Track Meet at Cal Poly.

Over 50 athletes competed — a number Cooper wasn’t particularly impressed with. Next year he hopes to have closer to 300.

“It seemed like we had more spectators and help since this year than participants.”

Cooper also hopes to attract more attention on marathons. His best time thus far has been 2:38.0. The world record is held by Jim Knoblock (2:07.00).

Cooper thinks he can lower his own time by nearly an hour in the immediate future.

He currently devotes 20 hours a week to his training, which includes over 200 miles a year on the track. His running body is the result of rigorous weight training.

“I have never been this strong before,” he said.

He hopes to be in Boston next spring for the World Ventures of públicos.

For now, however, he still needs some help getting to Hawaii. Tickets for the benefit drawing are available at the Disabled Student Office on the Cal Poly campus and in the University Union.

Several prizes, including five dinners, are available. The grand prize of a one-month membership to a local health club will be offered.

Biographical

Yakitori

By David Lammers

It’s the thought that counts

We had flown across the United States and checked into the Sheraton Hotel in downtown Seattle. My three young children all started wailing for something to eat, preferably a hamburger.

I was tired and needed a shower, but we took the kids down the street and into a Wendy’s. To get the kids out of my hair, I asked my weary, pregnant wife to go find a table while I ordered food for all of us.

I carried two trays over to where my family was waiting. But the only place for me to sit was at a small table nearby. A man in a wheelchair was already sitting at one side of the table, eating a baked potato and drinking milk.

“Mind if I sit down here?” I asked.

“Go right ahead.”

The guy had a beard and wore an old tee shirt with a wheelchair racer on the front. My mind started turning.

“This is downtown Seattle. The guy is probably living on the streets, in some rooming house. A baked potato is probably all he can afford,” I thought to myself.

“Nice children you have over there,” he said. He spoke with a confident voice. Pretty soon I felt comfortable enough with Rory Cooper to ask what had put him in a wheelchair.

He had been living in West Germany, working as a translator — a certified translator, he told me. One day, while he was riding a bicycle, a bus ran over him.

After he got out of the hospital, he went to California and got interested in electronics. He got his Ph.D. in electronics engineering last year. His dissertation was in control theory, and now he is teaching at the University of California at Sacramento and developing controls that ease the lives of people in wheelchairs.

My mind flashed back to 1972. Working at a golf course outside of Boston, I was riding a bicycle to work early one sunny Sunday morning when a German shepherd, sitting on the front porch of a mansion, spotted me. His ears stood straight up, and he tore across the lawn.

Way behind me I heard a car go into a slide. The dog grabbed my coveralls at the ankle, and my 10-speed started to topple. The sliding car closed in.

“Good morning,” I thought, forgetting Yogi Berra’s maxim.

Later, the doctor told me how lucky I was that my rear end had jammed into the car’s passenger window without damaging my spinal column.

I thought of that incident while I talked to Cooper.

He said he was in Seattle for a big wheelchair race at the University of Washington. His wife, a German, was back home for a visit. He thanked us for the dinner company before he wheeled down the street to his hotel.

I promised myself never to judge someone again, and never to feel sorry for myself again over some stupid little thing.

Promises like that are more easily made than kept.

I thought about Cooper again the other day. My wife was in a small maternity hospital, giving birth to a healthy baby girl a few days earlier. The kids started wailing for something to eat, preferably a hamburger.

After paying for the second extra cheeseburger, I commenced to worrying: “How can we care of all of these kids? How much will it cost to send all of them to school?”

And so on.

No bearded man wheeled in to ease my mind. But I remembered the man I’d met in a distant hamburger joint, and I felt a bit stronger. For a moment I thought about how lucky we are. I thought about how some people deal with adversity and strive for greatness.

With human beings, most of the time it’s the thought that counts, one way or another.
Background

- More than 100 million people estimated to be moderately or severely disabled.

- In the United States, Americans with disabilities constitute the third-largest minority.

- According to the Bureau of the Census, there are 54 million individuals with disabilities in the U.S.

- Detrimental physical and psychological effects related to disability are well documented in the literature.
History of Recreation as Rehabilitation

- Popular belief is that exercise leads to improved physical health and an increased sense of psychosocial well-being.

- Positive psychosocial outcomes have been reported due to participation in activity regardless of exercise mode.

- Exercise has been correlated with a reduction in anger, confusion, fatigue, increased self-esteem and tension.

- Additional benefits such as a resistance to fatigue, enhanced cardiovascular fitness, improved social skills, and psychosocial health have all been found in studies involving individuals without disabilities.
Sport and Employment of People w/Disabilities

- Federal Government to become Model Employer for People with Disabilities, including Veterans with Disabilities.
- Set goals of 5% of federal employees to be PwD/VwD.
- Only 0.88% of Federal Employees are PwD.
Sports and Recreation are Important Modalities of Rehabilitation

- The more our life is filled with things that interest us, the higher our satisfaction with our quality of life (Kielhofner, 1985).
- Since these volitional factors influence choice about action and behavior they have a key role in enabling an individual to adapt to disability and re-engage in life (Kielhofner, 1985).
Why Encourage Exercise?

- Learn Confidence
- Change Perceptions: Self, Family, Community
- Promote Health: Physical and Mental
  - Nearly 49 million Americans with disabilities (Jassen 1994)
  - Need in disability population (Rimmer 1996)
  - CVD Leading Cause of death (Kennedy 1986)
  - Activity levels decrease after disability
  - Daily WC propulsion does not maintain fitness (Janssen 1994, Sedlock 1990)
Acceptance and Inclusion

- Recreation is a valuable strategy for inclusion in activities that are culturally valued (Buning, 1996).
- Sports and recreation creates an arena for continuing the gains of medical rehabilitation:
  - challenging personally held ideas about disability and handicap
  - testing out a new self-concept that includes acceptance of disability (Schlein et al., 1997)
Sports and Recreation Opportunities

- Lack of opportunity and information about adaptive fitness make it more likely that these same individuals will fall to the negative health consequences of inactivity, repetitive strain injury and obesity (Taylor et al., 1998, Rimmer et al., 1996, Heath and Fentem, 1997)
General Fitness and The Non-Elite Athlete

- Barriers to Exercise: Physical and Psychological
  - Barriers Experienced by Able-Bodied
  - Availability of Programs
  - Availability of Equipment
  - Transportation
  - Accessibility
  - Functional Limitations (Cardio-respiratory system)
  - Psychological (Depression)
Paralympic Principles

- Paralympic Motto: “Spirit in Motion”
- Concepts:
  - **Transcendence**: Courage and achievements of the athletes participating to go beyond their limitations.
  - **Equality**: Both a statement of fact and an aspiration, encouraging people with disabilities and of different cultures to be viewed as equal.
  - **Integration**: Reflects the pursuit of providing equal access to all.
Paralympic Movement

- The Paralympics, affiliated with the Olympic games, offers the ultimate adaptive sports competition.
- Paralympic movement has had a positive impact on the perception of society regarding people with disabilities (Steadward and Peterson, 1999).
Paralympic Games

- International Paralympic Committee
  - [http://www.paralympic.org](http://www.paralympic.org)
- 26 Sports
- Winter Games: 1976 Örnsköldsvik, Sweden
- Summer Games: 1960 Rome, Italy
- World and Regional Championships
PARALYMPICS

COUNTRY PARTICIPATION

ATHLETE PARTICIPATION

Year

Number of Countries

Year

Number of Athletes


0 20 40 60 80 100 120 140 160

0 500 1000 1500 2000 2500 3000 3500 4000 4500

National Veterans Wheelchair Games

- Started in 1981 at the Richmond, VA Medical Center.
- Largest annual wheelchair sporting event.
  - 550-600 participants each year
  - Create a model for accessibility (physical, community, accepting)
  - NVWG uses a mixed-team model.

Classes
- Based on level of impairment and sports specific function

Divisions
- Novice
- Open
- Masters
Super - G

- Premier event at NVWG
  - Qualification required
  - Open competition
- Highlight mobility skills
- Use “extreme sport” model
  - Make attractive to audience
- Set higher mobility goals
National Disabled Veterans Winter Sports Clinic - Skiing

- Largest ski clinic in the world
  - 350-400 participants
  - 180 instructors

- Promote rehabilitation and reintegration through overcoming emotional, mental and physical challenges
  - Show possibilities despite and beyond their impairments
National Disabled Veterans Winter Sports Clinic - Activities

- Provide instruction for a broad range of disabilities
- Allow every participant to experience success
- Broad array of equipment available, and constant development
- Fitting and modification on-site
Warrior Games

- 220 Wounded, injured and ill servicemen and women from the Army, Marine Corps, Navy, Air Force, Coast Guard, and Special Operations.
- Events: Archery, cycling, wheelchair basketball, shooting, swimming, track & field, and sitting volleyball
- Eligibility: Competition for wounded, ill and injured servicemen and women with physical and visual disabilities:
  - Amputations. Spinal cord injuries, PTSD, blind/visually impaired, brain injury (both TBI and Stroke).
Warrior Games Objective

- To elevate abilities through athletic competition for wounded, injured, and ill service members and veterans by providing as focal event to empower the incorporation of athletics into military wounded warrior programs.
- The Warrior Games serve as an introduction to Paralympic sports for injured service members by inspiring recovery, physical fitness, and promoting opportunities for growth and achievement.
- Warrior Transition Unit physical activity and sports participation has increased 23% in the past two years.
Warrior Games Events
Warrior Games – Field Events
Warrior Games - Basketball
Warrior Games - Volleyball
Cycling – Hand and Recumbent
Psychosocial Outcomes

- **Self-Esteem**
  - Self-esteem is a global measure of people’s perception of their self-worth and it is thought to be maintained through success experiences and positive judgments from others.
  - Gains in self-esteem and acceptance of disability have both been found to be psychological indicators of successful rehabilitation for individuals with traumatic disabilities.
  - Self-esteem is related to the belief that one possesses the necessary skills to complete a task as well as the confidence that the task can actually be completed with the desired outcome obtained.

- **Depression**
  - Depression has been ranked as the leading cause of disability in the United States, with over $40 billion being spent each year on lost work productivity and medical treatment related to this illness.
  - Research suggests that depression is a risk factor for disability and that disability increases the risk of depression.
  - When compared with other traditional treatments for depression, exercise was just as beneficial and not significantly different from psychotherapy, pharmacologic therapy, and other behavioral interventions.

- **Post-Traumatic Growth**
  - PTG has been positively correlated with social support, active coping, and participation in leisure activities.
  - Leisure activities have been broadly defined by Kleiber to include good acts (e.g., volunteering) or good habits (e.g., regular exercise, sport and recreation).

- **Quality of Life**
  - There is a consistently positive association between physical activity level and Quality of Life (QOL).
  - There is an alarming rate of physical inactivity among older adults particularly those aging with a disability. There is strong evidence for the beneficial effects of physical activity on impairment, function, and health-related aspects of QOL among older adults, but there is less conclusive evidence for positive effects of physical activity on disability and global QOL.
Social Interaction and Athlete Development

- Sports build a sense of confidence and acceptance of disability (Cooper, 1990, Laferrier et al, 2012)
- Teamwork provides opportunities for learning about abilities, compensatory strategies, and adaptations on and off the court. (Laferrier et al, 2012)
- “Novices” report improvements in independent living skills and communication (Laferrier et al., 2012)
- Longer term participation in sports is correlated with higher QoL, Self-Esteem, Less Depression, and higher PGI scores.
- Short-term programs (<9 weeks) effects tend to washout over time.
Sports and Recreation Across the Life-Span

- Sports can improve cardiovascular fitness among PWD. (Cooper et al., 2001)
- Opportunities for healthy sport and recreation are expanding (slowly)
- Adapting healthy life-style including activity is important. (SCI Clinical Practice Guidelines, 2005)
Integrated Recreation

- Impact still needs to be studied (PwD and family)


Exercise in Rehabilitation Medicine, 2nd Edition, W.R. Frontera, Editor, Human Kinetics Publishing, Champaign, IL, 2005

Elite Athletes with Impairments, R.A. Cooper, M.L. Boninger, I. Rice, S.D. Shimada, R. Cooper, Chapter 21


NATIONAL CENTER ON ACCESSIBILITY (2003) National center on accessibility: Recreation, parks, and tourism. Bloomington, IN, Indiana University.


Thank you to Nick Lancaster (VA Rehab. R&D), David Rozelle, Paralympic Committee and PVA for various photographs, to Erica Authier for assistance with slides, and to all in HERL. A special thanks to the participants in our studies and the events where photographs were taken.
Authier EL, Pearlman J, Allegretti A, Rice I, Cooper RA, A Sports Wheelchair for Low Income Counties, Disability and Rehabilitation, in press.


Cooper RA, and Bedi JF, An Analysis of Classification for Top Ten Finishers in Prominent Wheelchair Road Racers, Palaestra, Vol. 8, No. 4, pp. 36-41, 1992

More Information

- Pittsburgh Steelwheelers
  - Basketball and Rugby
  - http://www.steelwheelers.org/index.html
- National Veterans Wheelchair Games
- Access to Recreation
  - http://www.accesstr.com/
- Wheelchair Racing Resource Page
  - http://home.wi.rr.com/birzer/
- A Celebration of Wheels
  - http://lenmac.tripod.com/sports.html
- Nicholas Institute of Sports Medicine and Athletic Trauma
  - http://www.nismat.org/index.html
- The National Center on Physical Activity and Disability
- http://www.isapa.org/
- http://www.aimfree.org/