Orienteering

THE ENIGMATIC SPORT OF NAVIGATION

"IS A SPORT INVOLVING THE USE OF A MAP AND COMPASS TO NAVIGATE BETWEEN SPECIFIED FEATURES OVER VARIABLE AND LIKELY UNFAMILIAR TERRAIN."

THE CHECKPOINT: Is a feature circled on the map marked by a control. There are variable numbers of checkpoints within each course and the same checkpoint may be used for multiple courses. The runner must visit these checkpoints in order in the shortest amount of time possible.

THE MAP: Orienteering maps are extremely detailed large scale topographic maps that describe features such as knolls, boulders, cliffs and other similar landforms. Map accuracy is very important as route choice is derived from all features that appear there. These maps range between 1:5000 and 1:10 000 scale depending on the kind of race being run. The course is outlined in magenta or purple by means of circles. Each of these is numbered and unless the meet is a score event, the checkpoints must be visited in order. The runner will not see the map until their start time whereupon their route choice begins.

THE COURSE: There are multiple courses per event usually 6 or 8. The difficulty of these increases incrementally, course 1 being the simplest and shortest in length. Each course is divided into a range of age classes and participants run against each other within them as well as against the clock. Course length parallels course difficulty and can be as long as 10 kilometres.

NAVIGATION: Route choice is paramount in Orienteering as it defines the length of time it will take a runner to get from control to control. Those that have superior navigation abilities and make wise route choices will reach the checkpoint quickest. Though being fit is also an important aspect of the sport, being able to navigate effectively is imperative.

SPORT HISTORY

1886 'Orienteering' used by Swedish military to describe crossing unknown territory with the aid of map and compass.

1893 The first competitive Orienteering event is held for Swedish military officers at their annual games.

1897 The first public Orienteering competition is held in Norway.

1919 Ernst Killander, a major in the Swedish army, brings Orienteering out of the military and organises the first public event outside Stockholm. The course: 12km with 3 controls. There are over 150 participants.

1922 With the popularity of the sport increasing dramatically; the first district championship is held.

1925 First meet is organised for women in Göteborg, Sweden.

1932 First international competition between Norway, Finland and Sweden takes place.

1933 Björn Kjellström and Gunnar Tillander create the Orienteering compass. Liquid filled with rotating housing and clear plastic baseplate.

1936 The Swedish Orienteering Federation is founded (Svenska Orienteringförbundet)

1941 Orienteering is made a compulsory subject in Swedish schools.

1942 The first Orienteering meet takes place in North America in November at Dartmouth College, Hanover, New Hampshire. Organized by a Finnish teacher Pilti Helskanen.

1946 Björn Kjellström immigrates to the United States where he greatly increases the interest in the sport as well as opening a north american branch of The Silva Compass manufacturing company.

1955 First Orienteering meet takes place in Australia at the Mount Lofty Ranges, South Australia.

1961 The International Orienteering Federation (IOF) is founded in Denmark by a committee of ten countries: Bulgaria, Czechoslovakia, Denmark, East Germany, Finland, Hungary, Norway, Sweden, Switzerland and West Germany.

1962 First European Orienteering Championships held in Norway.

1964 England's first Orienteering club is established.

1965 The O-Ringen, a competition spanning 5 days is established; one that would become an iconic event.

1966 The first World Orienteering Championships (WOC) take place in Finland.

1967 The Canadian Orienteering Federation is founded.

1970 The United States hold their first national championships at Southern Illinois University.

1971 The United States Orienteering Federation is founded.

1977 Foot Orienteering is recognised as an Olympic sport.

1978 IOF symbols for control descriptions are introduced at the WOC in Norway.

1983 Compass company Suunto introduces the thumb compass.

1990 First Junior World Orienteering Championships (JWOC)held in Älvsbyn Sweden.

1991 Introduction of the 'short distance' race to the World Championships.

1992 OCAD software is developed by Hans Steinegger for the production of Orienteering maps.

1994 Norwegian company Emit AS premiers their electronic punching and timing system at World Cup Kristiansand, Norway

1997 Swedish company SPORTident creates an electronic punching system.

2004 The best contestants in the WOC are tracked by GPS during races adding an exciting element to competitions. Positions live streamed on the internet.

2006 The *World of O* website is created by Jan Kocbach compiling a comprehensive index of internationally recognised runners, their rankings and current orienteering events.

ACADIA UNIVERSITY CAMPUS

1: 5 000

CONTOUR INTERVAL 1 METRE

COMPASS

Second only to the map in importance is the participant's compass. Without it, navigating anything higher than a course 2 would be unwise if not impossible. It is critical in establishing route choice and navigating from one control to another which is done by calculating a bearing between two points. The style of compass used in Orienteering was conceived by Gunnar Tillander and Björn Kjellstrom who had the idea to amalgamate a protractor and a standard compass. This resulted in a device consisting of a floating magnetic needle, a moveable compass housing and a clear plastic base plate. The base plate acts as the protractor; coupled with the swivelling housing, taking bearings is easy and accurate.

ELECTRONIC PUNCH

While the manual punch is primarily used, electronic punching popularity has climbed over the years. This intricate system provides benefits to both runners and organisers. The runner no longer has to waste time at a control by stopping to punch a card, instead they are equipped with a small device that attaches to their thumb. This is equipped with an RFID chip that communicates with an SI station fixed to the control via radio waves. The participant can approach at any angle and receives both audio and visual confirmation that their punch has been logged.

PUNCH CARD

Punch cards are one of the most critical pieces of equipment during a race. This tyvek card is either pinned to clothing or attached to the wrtist. The cards provide proof that a runner has successfully located the controls on their course. At each control a punch is used to stamp a unique pattern through the card, this is then matched with a master copy at the finish to check for accuracy. If a contestant punches the wrong control, or mispunches in the wrong box, they are disqualified.

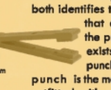
CONTROL

Controls are prism shaped orange and white nylon markers that identify the location of a course feature. They are either hung in surrounding vegetation or attached to a stake driven into the ground at the appropriate point. Each control is identified by a number or alphanumeric code and is equipped with a unique punch.

SI STATION

This station, like a manual punch, is matched with a specific control. The runner swipes their thumb card passed the station as they go by, the two chips identify each other through radio waves and the point is logged in both the SI station and the SI card. These points are transmitted to the Finish area where they are printed post race and checked for accuracy.

MANUAL PUNCH

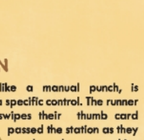


Each control is paired with a device that both identifies the control and establishes that a participant has located the proper marker. While there exists a sophisticated electronic punching system, the manual punch is the more common of the two. It is outfitted with a set of metal spikes that when depressed stamp a unique array of holes into the punch card. The punch is fixed to the control with nylon string, though in cases where the control is being used by several courses at once, or is marking a feature such as a rock face, punches may be affixed to a stake.

FOOTWEAR

Good footwear is an important piece of gear for an orienteer. It is not only necessary for comfort, but also for traction and grip. Due to variable terrain and amounts of climb, shoes need to be versatile to cope with uneven ground, slippery conditions and inconstant forest floor. Several Orienteering specific brands exist providing shoes that have deep treads inset with metal studs for increased leverage.

RACING SUIT



For the frequent or competitive orienteer, a breathable racing suit is preferable. Shorts are not normally worn and are not recommended as running through various forest densities and traversing marshy terrain or brambly areas can result in cuts and other injuries. Wearing lightweight breathable pants protects against the majority of these. Many clubs have their own particular suits reflecting their colours and logo.

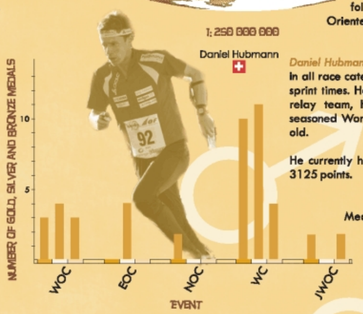
O-GEAR

CONTROL DESCRIPTIONS

Maps for each event are accompanied by a set of course descriptions. They itemize the important information the runner needs to know about the situation of the control. Each feature, direction, situation and appearance that could be found on an orienteering map has been translated into a set of universal symbols enabling the system to be used worldwide.

THE INTERNATIONAL ORIENTEERING FEDERATION

The IOF was founded in 1961 at a congress held between its founding member countries: Bulgaria, Czechoslovakia, Denmark, East Germany, Finland, Hungary, Norway, Sweden, Switzerland and West Germany. Since its inception the number of member countries has increased worldwide to 70. In addition to providing international rules and regulations for the sport it has standardized map symbology and represents the 4 disciplines of Orienteering: Foot, Mountain Bike, Ski and Trail. The organization is recognized by the International Olympic Committee and follows key annual international events such as the World Orienteering Championships and the Orienteering World Cup.



Daniel Hubmann is considered to be very competent in all race categories though he exhibits exemplary sprint times. He is an important player in the Swiss relay team, has achieved impressive wins over seasoned World Cup winners and is only 26 years old.

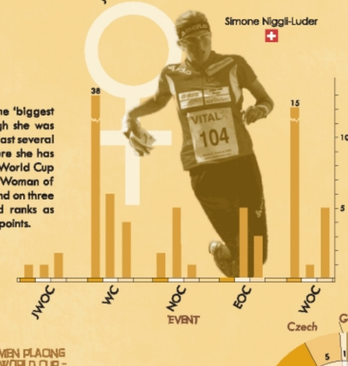
He currently holds number one world ranking with 3125 points.

Medal statistics 2004-2009

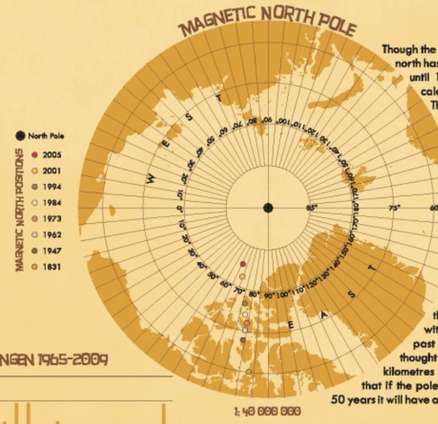
JWOC: *Junior World Orienteering Championships*
WC: *World Cup*
NOC: *Nordic Orienteering Championships*
EOC: *European Orienteering Championships*
WOC: *World Orienteering Championships*

Simone Niggli Luder has been labelled the 'biggest star in the sport of Orienteering'. Though she was educated as a biologist she has spent the last several years as a professional orienteerer, where she has consistently topped the statistics with 15 World Cup gold medals. She has been titled Sports Woman of the Year in her home country of Switzerland on three occasions, is only 30 years of age and ranks as number one female in the sport with 2500 points.

Medal statistics 1996-2009

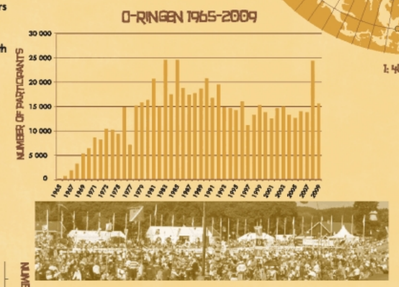


MAGNETIC NORTH POLE



Though the concept and knowledge of magnetic north has been around for centuries, it was not until 1831 that its location was properly calculated and logged by James Ross. This was carried out on the coast of Boothia Peninsula and required many attempts to produce an accurate reading. At this time, Ross concluded that magnetic north was situated at 70°0.5' N, 96° 46' W. Over the next century other expeditions undertaken observed the pole had shifted and did so quite dramatically over the course of the 20th century. This movement occurs due to an anomaly called *secular variation* in which the earth's magnetic field changes over time thus repositioning its axis. The speed with which the pole has travelled in the past 30 years has accelerated and is now thought to be moving at a rate of roughly 40 kilometres per year. At this rate, it is posited that if the pole retains its trajectory within the next 50 years it will have arrived in Siberia.

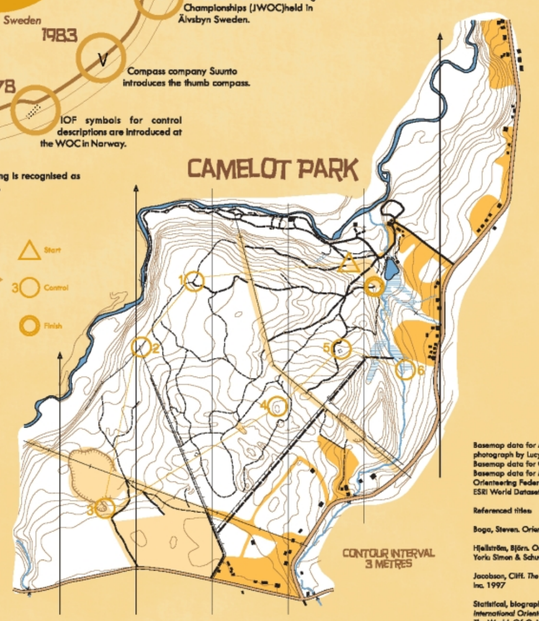
O-RINGEN 1965-2009



The **O-Ringen** is an event consisting of 5 races spanning 5 days that takes place annually in Sweden. It was conceived as a means to enhance the sport and boost international participation. The races are primarily long and middle distance, though sprint courses are organised for elite orienteerers. Since its inception in 1965 the popularity of the event has increased dramatically attracting contestants worldwide, often registering more than the World Cup itself. For the competitive runner, this event is prestigious and defining. Though the race attracts highly competitive, world class athletes, participants encompass a wide range of skill and age making it the single largest sporting event in Sweden.

A course on an orienteering map is primarily purple or magenta to provide contrast to other map elements. The Start of a given course is identified by a triangle; the Finish area is marked by a set of double circles; it may overlap the Start triangle if the same area is used for both. The control points themselves are defined by a circle and are labelled with a number. Each of these control points are connected with lines to give an overall perimeter of the course. The runner will not, however, use them as a path to get from control to control.

CAMELOT PARK



World Orienteering Championships Relay event 2008

Basemap data for Acadia University Campus map digitized from a 1:10 000 aerial photograph by Lucy Hughes 2008
Basemap data for Camelot park provided by Orienteering Nova Scotia
Basemap data for Magnetic North (World from space projection) and International Orienteering Federation (Mollweide projection).
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nscc Centre of Geographic Sciences
Cartography by Lucy Hughes, December 2009