

# Nordic Combined



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## About the Tutorial

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Nordic Combined is played on a snow field. An athlete needs to move down along a ramp like structure known as in-run. He has to jump out of it with as much power as possible and need to fly along the steeply hill. This tutorial will guide you with some basic knowledge about Nordic Combined.

## Audience

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This tutorial is meant for anyone who wants to play Nordic Combined. It is prepared keeping in mind that the reader is unaware about the basics of the sport. It is a basic guide to help a beginner understand this sport.

## Prerequisites

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Before proceeding with this tutorial, you are required to have a passion for Nordic Combined and an eagerness to acquire knowledge on the same.

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# 1. Nordic Combined – Overview

Nordic combined is a sport which includes ski jumping and cross-country skiing. Currently Nordic combined is played in Winter Olympics and to popularize this sport, FIS Nordic Combined World Cup is played. The highest authority to regulate Nordic combined is the International Ski Federation. It has not sanctioned any women's competition. Nordic combined is largely dominated by the Scandinavian countries. This sport is invented by Norwegians and many great players come from Norway to entertain the crowd.



According to **Gunderson method**, the athlete who will touch the tape at the end of the cross-country race first will be the overall winner. We will discuss about the Gunderson method later.

Nordic Combined was played with three medal events which include **individual**, **team**, and **sprint**.

## Individual Events

In individual event the athletes perform twoski jumps from a hill on the first day of the competition and the range is either 295 feet or 90 metres. On the next day cross-country race takes place in which the athletes have to cover 15 kilometres.

## Team Events

Team event is normally favourite among the viewers and is also crowd pulling in nature. Here each nation will have four players who have to perform two jumps from a hill on the very first day.

Each team gets ranking based on their eight jumps made on the day. The same players who took part on the first day play the cross country race the next day as relay race of 20 kilometres. Each player will ski for 5kms.

## Sprint Events

Sprint event is also very popular among the viewers. Here unlike other events the ski jump will be made from a large hill and the range is either 394 feet or 120 metres, and like others, the cross-country will take place on the next day whose length will be around 7.5kms.

## A Brief History of Nordic Combined

The Nordic combined sport includes ski jumping and cross-country skiing. Basically skiing technique was invented to travel over snow on skis. It is believed that skiing was invented and practised as early as 600 B.C. Inception ski jumping which is a part of Nordic combined started in Norway in 1808, when Ole Rye jumped over a height of 9.5 metre.

World's first ski jumping competition was held at Norway in the year 1866. Sondre Norheim won that championship and he was believed to be the father of modern ski jumping. After world war-1, a new technique was developed popularly known as **Kongsberger Technique** that helped Sepp Bradl of Austria in achieving 101 metre jump in 1936.

Coming back to Nordic combined, the first major competition was held in 1892 in OSLO. This sport became famous when it was included in 1924 Winter Olympics. Initially, cross-country race was held first and ski jumping the day after. But after 1950 the style was reversed and ski jumping was held first.

## Participating Countries

Nordic combined has gained much popularity all over the world. Since its introduction to modern Olympics in 1924, the popularity of this sport by different nations grew exponentially. Many Asian and non-Asian countries participate actively in this sport. Some of the major dominating Asian countries are Kazakhstan, Korea, Japan. But Europeans mainly the Scandinavian countries are dominant in this sport. The list includes Poland, Italy, Norway, Austria, Germany.

In Sochi Olympics, Eric Frenzel of Germany won gold medal in men's individual. Norway has always produced some great players in Nordic combined as men's team of Norway won gold medal in Sochi Olympics. Also Jorgen Graabak of Norway won gold in men's individual LH category.

## 2. Nordic Combined – Equipment

Before discussing the equipment, let us first discuss the playing environment of the sport.

### Playing Environment

Nordic combined is a sport that demands snow fields and hilly areas for playing. Snow is needed because the players need to ski on the open the plane surface. In general, you can only get musky plain surface in terms of snow only. Apart from that one has to show his skills of sliding, turning and jumping the bumpy hills. This means that the area should be hilly with lot more sliding edges.

Let us now discuss the equipment used while playing Nordic Combined.

### Bindings

When you are mounting the binding, try to bind it parallel in the direction of running. Ski should be attached in such a manner that 60% of it can be used as front part.

### Boots

The boot should be comfortable enough when the skier leans forward while performing skiing. If you are going to buy a new shoe for skiing, do check the following characteristics:

- High backed
- Low cut at the front
- Flexible

### Connection Cord

It is an essential part of binding. This helps the ski in getting attached to the athlete's boot. If connecting cord will not be connected properly then unsteady motion of the ski will occur during the flight.

### Dress

It is mandatory that all the part of the suit should be made up of the same kind of material. They should have some part of air permeability. As the sport is played on snow track, it is better that the thickness of the suit is more. For the flexibility during the sport, the size of the suit should be perfect for the athlete when he is in upright position.

### Jumping Skis

They are designed specially to be used for skiing purpose at the steep hills. The length of the ski can be as long as 146% of the athlete's body height.

However; the shaping and curvature of the suit is done by considering certain geometric features. To jump a certain length, an athlete needs to have certain body weight.

## Backpack

A player must carry a backpack as it is necessary in case he is not able to avail any help. The backpack must be lightweight and should have contain some sweet chocolates, water, first aid box, a camera, mobile or walkie talkie or GPS with him.

Sweet chocolates will give him carbohydrate and instant energy whereas water will save him from dehydration. Besides these, a GPS will enable you to locate yourself and a mobile phone can help you to communicate with others in danger. First aid is a must because it will give you medical assistance in need and last but not least a camera will allow you to take pictures of great sightseeing.

# 3. Nordic Combined – Basic Mechanics

Instead of randomly learning about the skiing methods, you should first understand the basic mechanics behind the process. It will help you grasp the techniques of Nordic Combined quickly and easily.

## Way of going down

When we talk about **sliding**, it means slipping downwards on a slope. There is an angle made by our body with the snow while sliding which makes our journey simple. This is why we slide on a downward slope. Here the weight creates a force component in the direction of slope. We can get frictional force when reaction of snow is multiplied with coefficient of friction. We will start sliding when the force component created by weight becomes more than the frictional component.

## How to sail smoothly

A skier will move in the direction towards which the ski is pointing because of least friction. If the skier will move in the direction of point of the ski then the ski will find its path of least resistance, and hence the player can move faster. If the skier will follow any other path then it will be hard for him to move because frictional force between ski and snow will increase. On the contrary, a skier can use this technique to stop himself on his way.

## Know how to distribute your body weight

Along the edges of the ski, the player must push the ski in a regular manner. Edges are the areas where we can avail most of the strength and power. We have to place ourselves in the middle of the ski so that we can distribute our weight throughout the ski. If we want to lean forward while moving with a ski, then we have to use the bindings of the ski properly.

## Control of Body

A player has to shift the weight of his body away from the centre of the ski at the time of initiation of manoeuvres. In case of sliding sideways also, this technique can be used by the skier. We know that that part of the ski will tilt downwards on which we will put our weight, so the skier has to apply his weight on the front side of the ski if he wants to make a forward turn. If the skier wants to turn it backward, then weight will be applied on the back side.

## Weight shifting on skies

Sometimes if the skier will shift his weight properly on the ski, then he can attain a great turn while moving on a direction. But he must be an expert player in shifting his weight on the ski because if a player will shift his weight sideways or frontwards or backwards then speed of the ski will vary and hence, the direction of movement will also change.



## 4. Nordic Combined – How to Play?

Till now we have understood the basic mechanics of ski jumping. Now it's time to learn how to play this sport through step by step procedure.

### Dress Yourself

This is the initial part, though it is a simple one, but the beginners often find it difficult to remember the process. The player has to put his boot into the binding perfectly and the most important fact is that the player has to make sure that the leaning angle of his boot and the ski must be same.

Regarding the front of the binding, the player has to slide the lip of the binding into the toe cup of the boot. For safety issues, the skier has to align the heel of the boot and bring it down into the heel cup along with the back of the binding.

For tightening the binding clips over the legs, the skier has to push the heel as much as he can into the heel cup. Once the skier put on the skis, he has to be careful about the following facts:

- The ski must be lying along with the slope to reduce friction while moving.
- Without sliding anywhere, the skier must stand sideways.
- If any foreign snow particle is present at the bottom of the ski boot, then the player before starting the movement must remove it.

### Putting off Skis

The first point before entering into the process is the player has to stand on a steady path. He should not move sideways at that time. To dismount himself from the heel of the boot, the player has to push the heel lever which is on the back of the binding.

After this process, an upward rotation of the heel cup will take place which will result in releasing of the heel of the ski boot. It will be very easy for the player to take out his boot.

### Travel in Straight Line

**Snowplough** is a method of travelling on a straight line. In case of a slope, the player can have control over his speed but not on direction.

To make a snowplough, the player must ski along a V-shape in such a manner that the tips of the player remain at a minimum distance of 10 cm. The main thinking behind this position is to prevent any two skiers from colliding with each other or running over each other.



This type of position is very important for the players as it acts as a brake while travelling. More is the distance from the tip of the skis, more will be the braking action and with stable maintenance of the body.

Here technically the skier is moving in a straight line path, but his skis are aligned alongside in diagonal manner which will create resistance.

### Take turns

Earlier we have discussed about the snowplough to learn about the speed control. Now we will discuss about the snowplough that will let us know the changing direction methodology.

The skier has to place his skis in a V shape and in such a manner that the right ski will try to go to the left side and left ski will try to go to the right side. The skier has to distribute the weight of his body in an even manner on the skis and should try to align himself more on the ski through which he wants to change the direction.



This is because more weight on a ski will create a low resistance path below that and the skier will travel very easily while making a turn. The basic formula for this is that if the player wants to turn towards right, then he has to apply more weight on left and if he wants to turn left then he must apply more weight on his right.

### **Move up to the height**

If the player or the skier will fall back, then to rise up from there, first of all, he has to bring himself towards the side of the skis. The skier has to bring himself as close to the skis as he can and then he has to push on his knees and try to stand up.

The skier really needs to push himself to his greatest limit in order to stand back on his feet. That's why the player must bring the weight on the boot of the forward ski.



The skier must position his downhill arms diagonally down and over the ski boot and his uphill arm should be very close to the uphill ski. The skier must push with his uphill arm so that he will be able to stand up again on his feet over the skis. At this time the downhill arm of the player should be in crouched position as it will help him immensely to go back to his original position immediately and safely.

# 5. Nordic Combined – Techniques

There are two basic propulsion techniques used by the cross-country skiers and these techniques are called as **classic** and **skate skiing techniques** which are applied to different surfaces during the race.

## Old Style

Classic style is mostly preferred by the players when no tracks have been prepared. This technique relies on the bottom of ski which is under the foot and is usually made up of wax. Players rely on it for the purpose of traction on the snow which allows the skier to ski forward.

Traction is defined as the motion generated by the body and a tangential surface by use of dry friction. The force involved in this process is called **tractive force**. In classic technique, one ski remains stationary and the other one is pushed forward and this is continued alternatively.

The poles are also moved forward alternatively. If the right leg is forward then the left pole should be forward and vice versa. Sometimes on descending surfaces double poling is used for greater propulsion. Classic style is normally executed on undisturbed snow or tracked snow.

## Modern Style

Skate skiing technique is different from the classic style as here alternating skis are advanced or propelled from one another at an angle. This style is predominantly followed by ice-skaters.

The competitors while approaching this technique slide on alternating skis. And this technique is executed on firm and smooth snow surface.

The skate skiing style is done by extending skis from one another at an angle which is called as 'V' shape. In cross country there may be situations to climb hills or ascending paths at that time the skiers use this V technique to advance.

# 6. Nordic Combined – Rules

## Rules of Scoring

In order to facilitate the scoring system in the Nordic combined sport and make it fan friendly, new method was of scoring introduced at the 1988 Winter Sports played in Calgary. It made the sport friendly for the spectators because fans do not have to wait for the final result.

Gunder Gunderson from Norway is a ski jumper and cross-country runner who invented the new formula. According to the rule, whoever crossed the finishing line first in the cross-country skiing is declared as winner.

But before the cross-country, the result of ski jumping is announced. The method is point based in which each athlete starts skiing with regular interval. The first player is the one who has earned the maximum points in the ski jumping. Once the winner or the lead of the ski jumping is declared or the rank of players is declared, each player prepares himself for a pursuit race.



## Rules of Pursuit Race

Pursuit race is one of the most important aspects of the Nordic combined as it is decisive to find the winner of the cross-country and the Nordic combined. The concept of pursuit race is that the winner of the ski jumping will take some advantage of few seconds from his next player.

The winner of ski jumping will start the race first for the next stage and the athlete who is next to him in the race or is second in the race by the difference of a certain time will follow him by that exact time.

Suppose the second player reaches the line two seconds after the first player. So in the next stage, the second player will start two seconds after the first one. We can also say that there is lag of two seconds between the first player and second player. This same method is applicable for all the players in the race.

# 7. Nordic Combined – Champions

International Ski Federation (ISF) is the highest governing body of Nordic combined that is organized all over the world. Apart from this, all participating nations have their own governing bodies too, that decides the rules for the sport. Some of the championships of Nordic combined are as follows:

- Winter Olympic Games
- FIS Nordic World Ski Championships
- Nordic Combined world championships
- US Nordic Combined Championships
- Olympic Games

In this chapter, we will provide a brief synopsis of some of the champions of Nordic combined.

## **Magnus Moan**

Magnus Moan is a Norwegian player born on 26<sup>th</sup> August 1983. He made his debut into the sport in the year 2002. He secured second position in 2005-2006 Nordic Combined World Championship.

He is also a good player in the field of cross country skiing. He started his world cup journey in 2003 and till now he has claimed 25 individual wins and 53 individual podiums. In 2006, he won a bronze medal in Olympics.

## **Charlotte Kalla**

Charlotte Kalla was born on 22<sup>nd</sup> July 1987 in Sweden. She made her debut into the sport in 2003-2004 season. In 2009, she won a bronze medal in FIS Nordic Ski World Championship in 4 x 5 relay and a gold medal in 10 km event.

In the world cup season in 2006, she has nine individual wins and 47 individual podiums. In her Nordic Combined career till now, she has bagged seven gold medals in total which include two golds in Olympic Games, two in World Championships and 3 in Junior World Championships.

## **Therese Johaug**

Therese Johaug was born on 26<sup>th</sup> June 1988 in Norway. She made her debut into the world cup in the year 2007 and till now she has 42 individual wins and 100 individual podiums.

From all the championships, she has gathered ten gold medals, one from Olympic Games, seven from World Championships and two from Junior World Championships. She has also won one silver and one bronze in Olympic Games and one silver and three bronzes in World Championships.



## **Marit Bjoergen**

Marit Bjoergen belongs to Norway who became Olympic champion six times. She has won three gold medals in 2010 Olympics and three in 2014 Olympics. Along with this, she has got 105 individual wins in cross-country skiing.

She also has 29 victories in World Cup in cross-country skiing event. In World Cup, she got seven victories in sprint event. In 2005 and 2010, she won the Holmenkollen Ski Festival.

## **Stina Nilsson**

Stina Nilsson was born on 24<sup>th</sup> June 1993 in Sweden. She made her debut into the world cup in the year 2012 and till now she has won three individual events and 14 individual podiums.

From all the championships she has gathered 4 gold medals, one from European Youth Olympic festival and three from Junior World Championships. In her career, she mostly participated in sprint and gained either first, second or third rank.