



MIRAGE
BRAVE

manual



Dear SWING customer,

You have just purchased a sophisticated product. We place great importance on our workmanship and the high quality of the materials used.

If you have any questions which are not answered in this manual, please do not hesitate to contact us directly (Tel: +49 81 41 32 77 888 - info@swing.de), or your Swing dealer.

The Swing Team.

Contents:

1.	Disclaimer and exclusion of liability	4
	Exemption from liability, waiver of claims, assumption of risk	4
	Assumption of risk.....	4
	Exclusion of liability, waiver of claims	4
2.	10 safety rules	5
3.	WARNING!.....	6
4.	Use of the Swing Mirage	6
	Operating limits	7
	Technical Data Mirage.....	7
5.	Your Swing Mirage and Brave Harness.....	8
	What is delivered with the Swing Mirage?	8
	What does the Swing Mirage look like?.....	8
	Manufacture of the Swing Mirage	9
	Development objectives	9
	Tests.....	9
	What does the Brave II harness look like?.....	9
	Using the Mirage with other harnesses.....	10
	The Brave II convertible harness	10
	The speed bag	13
6.	Before first launch.....	13
	Familiarise yourself with your equipment!.....	13
	Risers and trimmer.....	15
7.	First launch	17
	Conduct at skiing areas:.....	17
	Launch preparations	17
	Launch.....	17
	Landing	19
	Short take-off capability (STC)	19
8.	Storing and looking after the glider.....	20
9.	Internet product information and safety notices	20
10.	Glider- and Pilotsdata	21
11.	Notes	23

1. Disclaimer and exclusion of liability

Exemption from liability, waiver of claims, assumption of risk

You agree that, before using the Swing speed rider for the first time, you have read and understood the manual in its entirety, including all instructions and warnings which are contained herein.

Furthermore, you agree to ensure that, before you allow any other person to use your Swing speed rider, this additional or subsequent user has read and understood the Swing speed rider manual in its entirety, including all instructions and warnings which are contained.

Assumption of risk

Use of the Swing speed rider and of its component parts involves certain risks of personal injury or death for the user of the product and for third parties.

By using the Swing speed rider, you agree to assume and accept any and all known and unknown, and likely and unlikely risks of injury.

The risks associated with the practice of this sport can be reduced, to the extent of the care required in a particular case, by observing the warnings contained in this manual.

The risks inherent in this sport can be reduced to a large extent by observing the warning guidelines contained in this manual and by using common sense.

Exclusion of liability, waiver of claims

By making a purchase of the Swing speed rider, you agree to the following points, to the extent permitted by law:

To waive any and all claims however they arise,

from use of the Swing speed rider and any of its components, which you have or may in the future have against Swing Flugsportgeräte GmbH and any other parties.

To release

Swing Flugsportgeräte GmbH and any other parties from any and all claims for loss, damage, injury or expense that you, your next of kin or relations or any other user of your Swing speed rider may suffer as a result of use of the Swing speed rider, including liability arising under law and contract on the part of Swing Flugsportgeräte GmbH and any other parties in the design and manufacture of the Swing speed rider and any of its components.

In the event of death or disability, all of the provisions contained herein shall be effective and binding upon the user's heirs, next of kin and relatives, executors, administrators, assigns and legal representatives. Swing Flugsportgeräte GmbH and all other parties have not made any oral or written representations and expressly deny having done so, with the exception of what is set out herein and in the Swing speed rider manual.

2. 10 safety rules

The greatest risk in Speedflying and Speedriding is their simplicity. This can cause users to be tempted into forgetting or ignoring risks. Exercise particular care if it starts to feel too “normal”.

- Assess objective risks

WEATHER: Never fly if there is a föhn wind, storm or cold front. Your speed rider may offer maximum safety, but the risks caused by extreme turbulence are unpredictable.

AVALANCHE: In unstable areas, make sure you have the appropriate skills/training and equipment (avalanche transceiver, snow shovel etc)

- **Inspect your equipment**

Inspect your equipment thoroughly prior to each launch, and do not launch if you discover any damage. Adjust your equipment according to the conditions – we recommend that you have a reserve chute for bigger slope distances.

- Assess your own well-being

– **never fly if you are unwell**, whether you are physically unwell or have other concerns. Take a rest day - the mountains will always be there.

- **WHAT IF? - Plan B**

Do not make any impulsive decisions. Take time to analyse the situation. Always make a plan B (e.g. choice of route, emergency landing areas etc).

- **ALWAYS CARRY OUT A “safety run”.**

Reconnitre a new route by making a flight with sufficient height. Be on the look-out for potential obstacles. Ensure when flying near ground level that no third parties will be injured.

- **FOOT LAUNCH = INCREASED RISIK.**

Please bear in mind that the Mirage was designed for flying on skis.

- **Do not be afraid to speak out**

if you feel that others are overestimating their abilities.

Likewise, accept comments from others, even if it is unpleasant to acknowledge mistakes.

- **ANALYSE YOUR MISTAKES.**

Analyse any near-accidents as if they had been actual accidents and learn the necessary lessons. Avoid a repetition, because next time it could be too late.

- **NO FRONTRISER TURNS**

The 3-line design does not allow front riser turns to be made! Pulling on the front risers invariably results in a stall, the consequences of which can be fatal!

- **NO RISK – NO FUN, NO LIMIT – NO LIFE.**

Respect your limits and do not go beyond them just because you are with more experienced pilots. Have the courage to say “enough”!

3. WARNING!

SPEEDRIDING IS DANGEROUS

This speed rider is an item of sporting equipment and NOT a piece of aviation equipment and therefore it does not have aviation certification.

For this reason, Swing Flugsportgeräte GmbH expressly states that it accepts no liability for its use.

- 1) Extreme care is called for when using the equipment.
- 2) This product should only be used by people who are in good physical condition.
- 3) The product must at no time be used in a manner which is careless, frivolous or negligent.
- 4) Users are responsible for their own safety and there must be no danger to third parties.
- 5) The product must not be used for aerobatics!
- 6) The user alone takes full responsibility for any injury which might arise as a result of use of this product.
- 7) The instruction manual must be read carefully before first use.
- 8) The laws applying to use of this product in the relevant country must be observed.

This manual contains additional information in various places concerning your safety. This information is indicated by two symbols:

Caution!



This symbol indicates a risk which may arise. If possible, we also explain how to avoid the risk or how you should react if the situation arises.

Tip!



This symbol is used when we give advice on correct use of the speed rider.

Caution!



It is imperative that the instructions contained in this Manual are followed at all times. Failure to do so renders invalid the glider's certification and/or results in loss of insurance cover. Furthermore, it could lead to serious injuries or even death.

4. Use of the Swing Mirage

- The instruction manual must be read carefully before first use and passed on to any other user or subsequent owner.
- The Swing Mirage is designed to be used with skis. The STC brake lines (included) must be installed if it is to be used for foot-launched flight. We recommend using the speed rider with skis.
- The only form of launch permissible is to gather speed whilst still on land, with the canopy fully inflated, until the pilot becomes airborne (no cliff, D-bag or similar launches).
- The product must never be used carelessly or negligently.
- Extreme care is required when using the product.
- This product should only be used by people who are in good physical condition.
- Use of the product is at your own risk. The manufacturer is not liable for any personal injury or material damage which should occur in connection with Swing speed riders. There must be no danger caused to third parties.
- Do not under any circumstances alter the construction of the Swing Mirage. If you do, any claims under the warranty will not be accepted and the type certification will lapse.

- Familiarise yourself with the Swing Mirage on training slopes before first use.
- The laws applying to use of this product in the relevant country must be observed.
- If you do not already hold a paraglider or parachute licence, we recommend that you carry out appropriate training and then move on to the speed rider.
- The Swing Mirage must not be used for aerobatics. The Mirage was not developed and tested for this. This includes any flying or flight manoeuvres at an angle greater than 90° around the longitudinal or latitudinal axes and any flight manoeuvres involving stall.

Operating limits

The Swing Mirage may only be used within the operating limits. A pilot has gone beyond those limits if any one or more of the following points apply:

- the take-off weight is not within the permissible weight range
- the glider is flown in rain or drizzle, cloud, fog and / or snow
- the canopy is wet
- there are turbulent weather conditions or wind speeds on launch higher than 2/3 of the maximum flyable airspeed of the glider (varies according to the total take-off weight)
- the air temperature is below -15°C or above 50 °C
- the glider is used for aerobatics/extreme flying or flight manoeuvres at an angle greater than 135°
- manoeuvres are carried out with loads below 0g or above 4g
- the glider is used for spiral dives
- modifications are made to the canopy, lines or risers which are not approved

Technical Data Mirage

MIRAGE	COMP	8,5	9,5	11,5	13,5
Certification	EN 926-1				
Nr Cells	25	25	25	25	25
Flat Area [m²]	8,0	8,5	9,5	11,5	13,5
Projected Area [m²]	7,2	7,6	8,5	10,3	12,2
Wingspan [m]	5,4	5,6	5,9	6,5	7,0
Projected Span [m]	4,5	4,7	5,0	5,5	5,9
Aspect Ratio	3,6	3,6	3,6	3,6	3,6
Projected AR	2,9	2,9	2,9	2,9	2,9
Take Off weight [kg]	60-119	60-119	60-119	60-119	65-119

5. Your Swing Mirage and Brave Harness

What is delivered with the Swing Mirage?

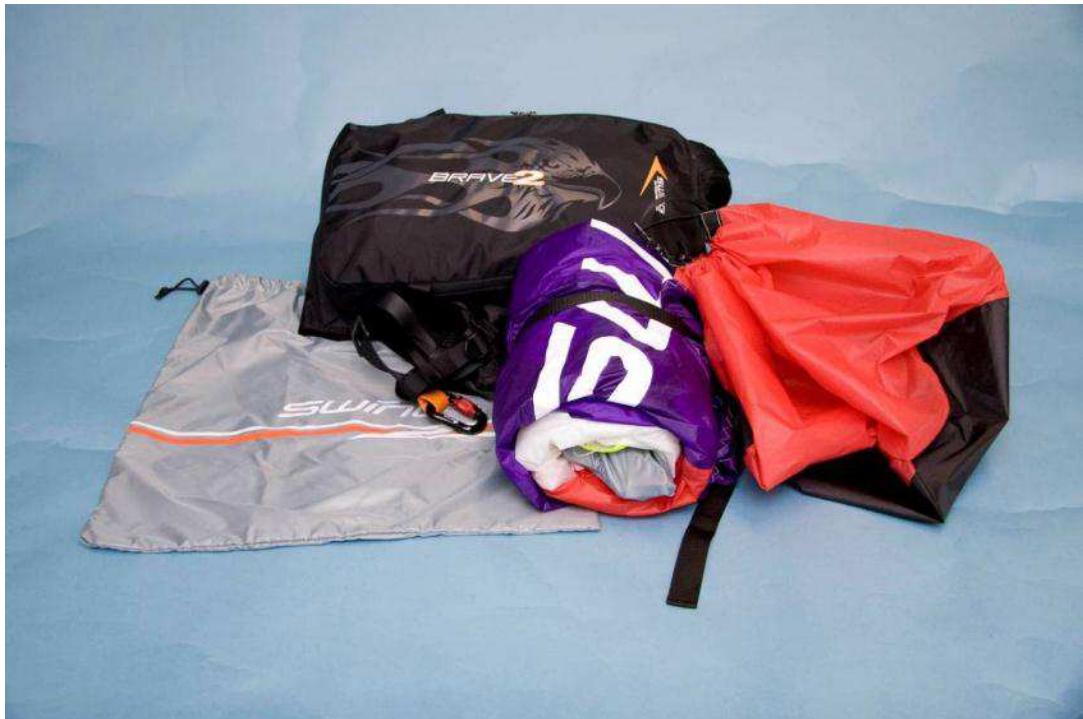


Fig. 1: Items included in delivery (incl. optional harness)

1. Swing **MIRAGE** speed rider
2. **BRAVE** harness (optional)
3. Speed bag
4. Inner bag
5. Manual
6. Spare main lines
7. STC brake lines

What does the Swing Mirage look like?



Fig. 2: Swing Mirage in action

Manufacture of the Swing Mirage

Your Swing Mirage was manufactured in Swing's production facility using the latest machines and manufacturing techniques.

A thorough quality control is carried out after every stage in manufacture.

The quality control of course includes inspection of the materials used as well.

This allows us to all but exclude the possibility of any material defects and to trace the exact origin of all materials used.

Development objectives

Our development team had the following objectives in developing and testing the Swing Mirage:

- balanced and safe launch behaviour in every situation
- wide speed range
- the greatest possible glide ratio window
- no unwanted roll and no pumping of the canopy
- the greatest possible collapse stability (e.g. in hard "touch & go's")
- pronounced and easily controllable "dive" on releasing the brakes
- high level of brake effectiveness with long control travel
- optimal conversion of energy from altitude (e.g. in case of obstacles)
- optimised line plan to prevent lines catching in the bindings on launch

NO FRONTRISER TURNS!



Caution: The 3-line design does not allow front riser turns to be made! Pulling on the front risers invariably results in a stall, the consequences of which can be fatal! The Mirage has brake handles for steering (toggles!).

Tests

In addition to the extensive flight tests, the strength of the Swing Mirage has also been tested under DIN EN 926-1.

The maximum takeoff weight is 119.5 kg, tested at 8g.

What does the Brave II harness look like?



Fig.3: Brave II

Using the Mirage with other harnesses

The Swing Mirage can also be used with any other Speedriding harness.

However, some features of the Swing Mirage are specially designed for use with the Brave II and are not able to be used with other harnesses.



Caution: Never use a reclined harness or a harness with a seat-board with the Mirage. These types of harness can make the Mirage extremely difficult or even impossible to control!

The Brave II convertible harness

The Brave II is one of the latest generation of convertible harnesses and specifically designed for Speedriding.

The harness was designed primarily for use with the Swing Mirage, and in its design importance was placed on ease of use, a high level of comfort and safety.

In just a few steps you can turn the backpack into a harness and vice versa.



Fig 4: Backpack



Fig 5: Take the harness out of the backpack



Fig 6: Turn the backpack inside out



Fig 7: Harness

Various adjustment options allow the Brave II to be altered according to the particular size of the pilot. Each pilot should make his/her **own adjustments before** using the harness for the first time, to make it as comfortable as possible.

There are various ways in which the Brave II can be adjusted for your size.

- The Brave II can be adjusted to suit your height using the **shoulder straps (Fig. 8)**.
- Using the **chest strap (Fig. 9)** you can adjust the Brave II, firstly, according to your height and, secondly, the length of the chest strap is also relevant to using your bodyweight to steer your Swing Mirage.
- The seating position can be adjusted using the **side straps (Fig. 10)**. It is possible to sit in a more upright or a more reclined position.



Fig 8: The shoulder straps can be used to adjust the Brave II to your height



Fig 9: Adjust the chest strap so that it suits you best



Tip:

The smaller the distance between the carabiners, the less the speed rider will react to weight-shifting



Fig 10: How upright do I want to “ride”



Fig 11: Speed bag pocket

The speed bag

The speed bag considerably facilitates use of the speed rider and its use is COMPULSORY in most speedriding areas.

On launch, simply take the glider out of the speed bag, roll up the speed bag and put it into the side pocket.

After you have finished riding, gather together the Swing Mirage, take out the speed bag and lay it out open beside the glider. Place the gathered-up glider on the outspread speed bag, put away the glider into the speed bag and close up the speed bag. Hang the speed bag over your shoulder and you can make your way to the lift.

Always check when you are putting away the Swing Mirage that you have put all of the lines and straps into the speed bag and that nothing is hanging out which could get caught.

After you have finished speedriding for the day, you can also attach the risers to the strap on the speed bag, by feeding the strap through the riser loops.

6. Before first launch

Familiarise yourself with your equipment!

Adjusting the brakes

The brakes of the Swing Mirage have been adjusted by the manufacturer in such a way that the brake handles can be held as shown in the photo. In this way, they are ideally adjusted for the Swing Mirage. A strip of plastic is delivered with the brake handle. It can be fitted as shown in the photo to later the stiffness of the toggle. For safety reasons, in general we recommend that you loop your hands through the brake handles.



Fig. 12: Recommendation: hand looped through the brake handle



Fig 13: Adjust the stiffness of the grip area stiffness by simply taking out or inserting the various parts

Risers and trimmer

NO FRONTRISER TURNS!

The riser of the speed rider is designed in such a way that it can be used while wearing gloves.

Your Swing Mirage is fitted with trimmers. Even if the trim range seems short, it has a great impact on the "dive & speed" of your Swing Mirage.

Keep the trimmer on the Swing Mirage closed for your first flights (zero position) and familiarise yourself with that.

The trimmer allows the best glide when closed, e.g. to fly to the next snow field or to glide away from territory which is not suitable for speedriding.

Open the trimmers to 'ride', when there is a lot of wind, to use the 'dive' or to lose height.

Remember that sink in turns increases markedly when the trimmers are opened!

To adjust the trimmers in flight, take the brake handles in your hands and open the trimmers symmetrically. If you open the trimmers asymmetrically (e.g. if you open them one after the other) the Mirage will fly a sharp turn towards the side of the closed trimmer.

Bear in mind that opening the trimmers gradually can unintentionally cause them to suddenly unfasten completely. If this happens, simply return the trimmers to the desired position.



Fig 14: Trimmer closed



Fig 15: Trimmer open



Trimmer positions

- Best glide: trimmers fully closed and approx. 15% brake. (Allow your arms to hang down)
- Maximum stability in turbulent conditions: trimmers fully closed and "active flying" using the brake handles.
- Maximum speed, steepest flight path: trimmers fully open, 0% brake.
- Minimum sink: approx. 50% brake.
- Minimum sink in turns: trimmers fully closed
- Maximum loss of altitude in turns: trimmers fully open

Facts about Trimmer positions

- The trimmers alter not only sink in turns, but also how much the Mirage responds to weight-shifting. The Mirage responds best to weight-shifting with trimmers closed. It responds least with trimmers fully open.
- The more you open the trimmers, the longer braking distance becomes. The position of the brake handles in zero position is also further up.
- The trimmers affect braking distance, but not your minimum flight speed. That means that your touch-

down speed is not affected by the trimmer position.

- The Mirage becomes more “pitchy” the more the trimmers are open. That means, for example, that it can shoot further forward on launch.
- Avoid flying for lengthy periods with the trimmers fully open while braking strongly. You may feel a slight vibration on the brakes.



Warning! Never fly with fully open trimmers in turbulent areas and when flying close to the ground, because of the increased risk of collapse!!!

Basic rule:

Trimmer closed (**Fig. 14**), normal flight

Trimmer open (**Fig. 15**), more “speed & dive”(descent with open brakes)

Replacing the trimmerwebbing

Frequent use of the trimmers during flight will cause wear to the trimmer strap. This could then result in the trimmers unintentionally opening during flight, on one or both sides. If this happens often, you should replace the trimmer strap as described here:

First push the free end through the trimmer buckle (Fig. 16), then feed the end through the harness buckle (Fig. 17). Pay attention when doing this to where it is positioned. The end of the arrow mark must be level with the bar of the buckle (Fig. 18).



Fig. 16:



Fig. 17:



Fig. 18:

Then feed the second end through the buckle (Figs. 19 and 20). Here too, pay attention to where it is positioned. The green mark must be level with the bar of the buckle (Fig. 21).



Fig. 19:



Fig. 20:



Fig. 21:

Finally, thread the remaining end of the strap back through the buckle (Figs. 22 to 24).



Fig. 22:



Fig. 23:



Fig. 24: Correct amount of strap remaining

Then check that the end extends about 3cm from the loop, so that the trimmer does not slip out of the buckle (Fig. 25).

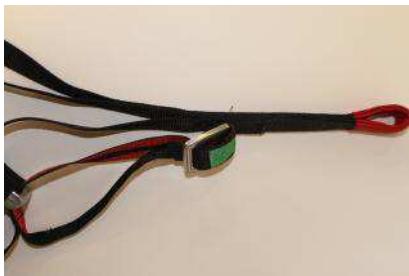


Fig. 25: Too little strap left



Fig. 26: Too much strap left



Fig. 27: Trimmer strap too short

Finally, check the length of the trimmer strap. If the trimmer strap is too short (Fig. 26), the trimmers cannot open fully (Fig. 27).

7. First launch

The 10 Safety Rules above should be second nature!

Conduct at skiing areas:

Here are a few important rules which must be followed at all times in skiing areas:

- First clarify local conditions, e.g. with the lift operator.
- In general, keep to the side of the slopes when speedriding.
- If there are designated speedriding areas, then use those.
- Pack away your Swing Mirage into the speed bag before you go back to the ski slope.
- Ensure that you do not get caught up anywhere with the Brave II or speed bag, so that it does not interfere with the lift operation. In developing the Brave II and the speed bag, we have taken care that no unnecessary straps or loops could interfere with the lift or gondola.
- Never put any third parties at risk, especially skiers.

Please observe these rules so that other speed rider pilots can continue to enjoy the areas too.

Launch preparations

- Familiarise yourself with the Swing Mirage before you launch for the first time by carrying out some practice inflations and trying out some runs on a training slope.
- Your first runs should take place in a straightforward area which is familiar to you

Launch

Before every launch, ensure that the trimmers are adjusted the way you want. The extremely high effectiveness of the trimmers means that incorrect adjustment on launch can have fatal consequences.

On the contrary, if you hold the A-risers on launch, the Mirage may surge forward.



Ideally you should launch with the brakes applied only about 30% (as Ueli Kestenholz is doing in the photo above).



Tip:

Start with only moderate speed only!

Landing

After you have landed, simply remain attached, take the speed bag out of the side pocket and pack away the gathered-up speed rider so that there are no lines hanging out.

Take the speed bag under your arm and make your way back to the lift.

We refer once again to the rules at the start of this section.

Safetytip:



After every landing, adjust the trimmers to the position you would like them in for your next launch!

Short take-off capability (STC)

Your Mirage comes with two extra Top brakelines which can be eyed in the unused fastening point. If installed, the Mirage will create more lift while braking. So, you can take-off somewhat earlier. You'll also "get more bang for the buck", because braking will convert the speed into more altitude.

Swing recommends to use the STC - lines for take-offs and landings without ski.



Attention:



If you're unsure how to install the STC-line, please consult with your dealer! Remember, the brakeline will be your "life-extender" in many occasions.

It's better NOT to install it at all, than doing it incorrectly!

8. Storing and looking after the glider

Always transport your Swing Mirage in the speed bag provided.

Store your speedriding equipment away from UV light in a dry room which is well-ventilated and has a constant temperature. Remove it from the convertible harness backpack and open the speed bag so that air can get in.

Make sure that you do not store the Swing Mirage while it is wet. It should always be dried out after use, preferably overnight in a room as described above.

If you do need to clean the speed rider, then use only a soft sponge and clear water.

Important:

- Harsh chemical cleaners, high-pressure cleaners/steamers will destroy the speed rider.
- Clean the speed rider only if it is absolutely necessary.
- Repairs should only be carried out by Swing Flugsportgeräte GmbH or a specialist we recommend.
- Small tears in the wing can be repaired using self-adhesive rip-stop material, provided that they are in places which do not bear heavy loads, are not at the seams and are no bigger than 3 cm.
- Replace damaged lines immediately!!!
- The Mirage has to be inspected every 100 flight hours or once a year, depending what comes first. If any damaged or worn-out parts need to be replaced, use only original parts from Swing Flugsportgeräte GmbH.

9. Internet product information and safety notices

Swing sends any relevant product and safety information by email to all registered customers. If you would like to receive this, please register your name through our website.

Swing generally includes all email addresses provided in warranty cards in its distribution list. If you do not wish your address to be included, please do not give it on the warranty card. Your email address will not be provided to any third parties.

Our website: www.swing.de

Visit the Swing Speedflying Team fan-page for discussion and up-to-date information:

<http://www.facebook.com/pages/Swing-Speedflying-Team/150047078156>

One further website:

<http://twitter.com/SSTMirage>

We hope you enjoy using your Swing Mirage & Brave harness!

The Swing Team

10. Glider- and Pilotsdata

Model: ***MIRAGE***

Size: Comp 8,5 9,5 11,5 13,5

Serial number: _____

Colour: _____

Date of purchase: _____

1. Owner

First name: _____

Surname: _____

Street: _____

Town/City: _____

Country: _____

Tel.: _____

Email: _____

2. Owner

First name: _____

Surname: _____

Street: _____

Town/City: _____

Country: _____

Tel.: _____

Email: _____

RISK - CONCEPT

RISK = DEGREE OF HARM x LIKELIHOOD OF OCCURRENCE



RISK-MINIMISATION



REDUCED DEGREE OF HARM

- ⇒ *safe equipment*
- ⇒ *appropriate flight programme*
- ⇒ *specific skills*



REDUCED DEGREE OF HARM

- ⇒ *good planning*
- ⇒ *experience*
- ⇒ *learning process*



safe equipment:

- glider (size)
- reserve chute
- safety equipment (helmet, protection)
- skis/shoes

appropriate flight programme:

- developed according to your personal condition (physical and mental)
- suitable for the area
- suitable for the weather
- suitable for the (flying) group

specific skills:

- condition factors
- flying ability (canopy control)
- skiing ability
- alpine knowledge (avalanche rescue)

good planning:

- weather (wind, visibility, rain)
- snow (avalanche situation, amount, condition)
- area (launch/landing place, obstacles)
- flying group (experience, number)
- day's activities (no. of flights)
- specific flight-planning (experience, Pan B)

experience:

- specific skills (see above)
- no. of flights and years of experience
- critical situations experienced

learning process:

- analysis of mistakes
- open discussion in flying group, club, association
- continual re-assessment of the situation based on planning and experience

11. Notes



Swing Flugsportgeräte GmbH

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