

# Expert Views



## Taking flight

Understanding aerial sports in life underwriting

Extreme Sports  
An Underwriting series

**SCOR**  
The Art & Science of Risk

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## Executive summary

Many thrill seekers take to the sky in their search for adventure and extreme aerial sports like skydiving, paragliding, BASE jumping, and bungee jumping have a devoted following around the world. Some of these sports are categorized in many life insurance companies' underwriting manuals as "high-risk" sports and many insurers go so far as to exclude coverage entirely.

However, given the number of variables involved in terms of types of sports, experience, settings, locations, equipment, and frequency, the risks related to aerial sports vary drastically from one jumper to another. This can make it difficult for underwriters to judge the risk when presented with the need to consider aerial sports as a part of the underwriting risk assessment process. In this report, we will focus our attention on understanding select aerial sports and the risks associated with them. Then, we will look at two practical case studies in order to provide underwriters with a deeper understanding of how risks associated with these sports should be considered during the insurance application process.

## Author's introduction

I spent most of my childhood in a beautiful mountainous village called Leysin, in Canton of Vaud, Switzerland. Nestled in the Vaud Alps the winter slopes were dominated by skiers, but once the snow melted, La Berneuse's 2045-meter summit drew a different group of outdoor enthusiasts: paragliders.

Without realizing it much, aerial sports had always been closer and more familiar to me than they are for most. The summer paragliders fascinated me and I often wondered what it must be like to see my village from far above. But as I got older, my enthusiasm was dampened by a growing unease until the fear of being up in the sky outweighed my curiosity and sense of adventure. What if the paraglide failed somehow? What if I fell? I could die. It just didn't seem safe.

Today, as an underwriter who has been assessing various associated risks including extreme sports for more than 15 years, I find myself thinking, "Actually, why not?" In this article, I have taken the time to analyze the real versus perceived risks of aerial sports. Perhaps I jumped too quickly to the conclusion that these sports were dangerous just because I wasn't particularly well educated about them.

The next time I visit my Swiss hometown I might finally take the leap and fly for the first time in my life. In the meantime, this knowledge will certainly improve how I judge unfamiliar risk profiles that I come across as an underwriter. I hope it does the same for you.

  
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## Introduction to Aerial Sports

*Skydiving? Are you crazy? But why would you jump out of a perfectly good plane?* If you have ever had a conversation about skydiving, you've likely heard this question. Maybe it was even you who asked it.

Today skydiving and jumping from planes go hand in hand, but the first inklings of aerial sport predate the Wright brothers' invention of the plane in 1903. Andre-Jacques Garnerin was a French aeronaut who promoted the use of hot air balloons in the French military in the last decades of the 18<sup>th</sup> century. Having studied physics before serving in the French army, Garnerin perfected the design of the parachute and became the first person to parachute regularly and from such extreme heights. In one particularly spectacular demonstration, he successfully completed a jump from 2,440 meters (8,000 feet).<sup>1</sup> The first parachute jump from an airplane was recorded over a century later.<sup>2</sup>

And planes certainly are not the only way to get airborne. In fact, many other aerial sports don't rely on planes at all. All you need for paragliding, BASE jumping, or bungee jumping is a cliff, some well-maintained safety gear, and a bit of courage.

Aerial sports have been historically been popular in regions such as North America, Europe, Australia, and New Zealand. In the US alone, approximately 3.6 million skydiving jumps were made in 2021, up from 2.7 million in 2000, according to the United States Parachute Association (USPA).<sup>3</sup> But its popularity is on the rise in other parts of the world too, especially in Southeast Asia and China.<sup>4</sup> With 110 member countries, the World Aerial Sports Federation (the FAI, or *Fédération Aéronautique Internationale* in French) oversees and harmonizes the international practice of more than a dozen airborne sports.

As insurance professionals, we need to be able to look beyond our knee-jerk reactions and the instinctual assumption of the dangers of jumping out of perfectly good planes in order to understand the actual risks involved with skydiving and other

aerial sports. In this article, we will analyze the data and discuss the factors that underwriters should take into account when considering these profiles. While there will likely always be certain exclusions for applicants practicing aerial sports, we may be able to offer more coverage than what seems possible at first glance.

Imagine, for example, that you are a life insurance underwriter and receive the following applications:

Case 1: Ken, age 49, is overweight (BMI 29.0) and has cardiovascular issues. He is thinking about trying skydiving for his upcoming 50th birthday. He has broken his right ankle in the past, but he reports that he has recovered. He has a history of panic attacks; he has been diagnosed with "mild" anxiety.

Case 2: George, age 42, is a professional parachutist (holder of advance level certificate) who wishes to buy a life insurance policy. He is a skydiving instructor who often does tandem jumps with first-time skydivers. He also regularly participates in competitions, where he specializes in delayed opening jumps and sometimes makes record attempts. In a typical year he will complete upwards of 800 jumps. He knows the risk of this sport and intends to reduce how often he skydives. Within the next two to three years, he will withdraw from record attempts, then from the competitions as well, before the age 50. He has a history of ocular injuries, once, at the age 30, when he was still a lower-level certificate holder. This has healed without any subsequent injuries or complications.

How should we assess these applicants' risk? If you deny one or both cases, what needs to be different for these applicants to be accepted?

We will return to these cases in the Implications and Recommendations for Underwriting section at the end of this report.





## Overview of Aerial Sports

### Skydiving

Skydiving, which is also commonly known as parachuting, is typically the first sport that comes to mind when discussing aerial sports.

Though many people try skydiving just once or twice in their lifetime, members of USPA and similar associations will skydive quite often, averaging 91 jumps each in 2021. For these individuals, each jump is a calculated risk. According to the USPA, their approximately 39,400 members made a total of 3.57 million jumps in 2021 with a total of 10 fatalities, the lowest year on record.<sup>5</sup> That means that in the US in 2021, skydiving had a fatality rate of 1 in 357,000, which was significantly lower than sunstroke (1 in 6,368), wasp or bee stings (1 in 57,825), and dog attacks (1 in 69,016).<sup>6</sup>

Of course, the rate of injuries is higher than the rate of fatalities. Sweden has reported an injury rate of 48 for every 100,000 jumps, while the US and other European countries report rates that hover around 170 injuries per 100,000 jumps, with 18 hospital admissions for 100,000 jumps in the US.<sup>8</sup> While this variation could suggest that different regulations are at play, it is important to keep in mind that differences in reporting systems, definitions of injury, and even cultural expectations as to when it is necessary to report an injury make it difficult to get a clear picture of the frequency of injuries associated with skydiving around the world. Of course, this is the case with many extreme sports, which is why, as underwriters, it

is important that we are familiar with the types of risks these athletes might face.

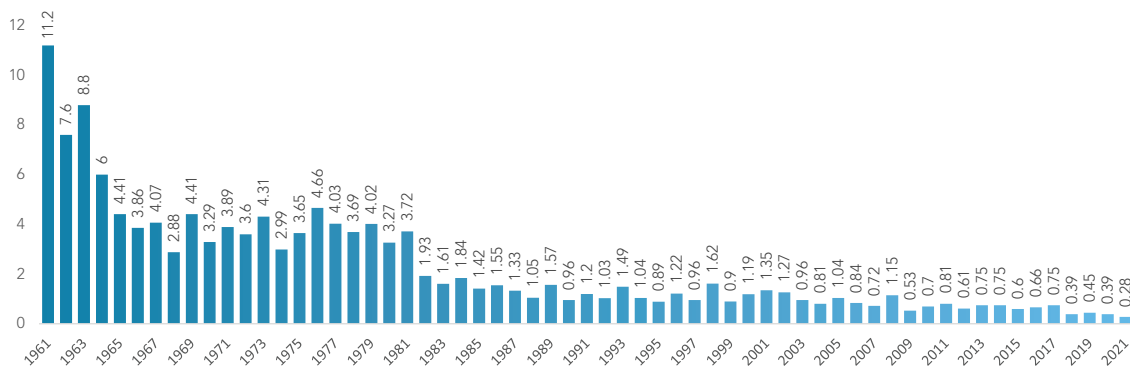
### Types of skydiving

First-time skydivers have several options for their first jumps, each with varying levels of supervision and risk:

- **Tandem:** Many people opt for a tandem jump for their first skydiving experience as it is considered a much less risky option. In this jump, the instructor and student have a shared harness; the instructor deploys the shared parachute and navigates to the landing area after 30-50 seconds of freefall.
- **Accelerated freefall:** In this option for first-time skydivers, the student has his/her own parachute but is accompanied by an instructor, who holds onto the student's harness for the first 30-50 seconds of freefall. The instructor offers in-air instruction and assists with stability before the student opens the parachute and navigates to the landing area unassisted.
- **IDA/Static line:** In Instructor-Assisted Deployment (IDA) and static line jumps, the student's parachute is deployed by the instructor or automatically at the beginning of the jump, and the student navigates to the landing area unassisted. These jumps start from a lower altitude than freefall jumps (typically around 1,000 meters or 3,500 feet).

A skydiver is considered a student until he or she earns a license (discussed further in the following section). From there, skydivers may continue with

Figure 1: Fatality Index Rate (Fatalities per 100,000 Skydives), Source: USPA<sup>7</sup>





individual leisure jumps or compete in a variety of skydiving categories including below:

- **Canopy formation:** team routines performed with parachutes deployed
- **Formation skydiving:** team routines while freefalling before parachutes are deployed
- **Canopy piloting:** navigating a predetermined course over land or water by steering a deployed parachute
- **Wingsuiting:** skydiving using a webbed-sleeved jumpsuit (a “wingsuit”) that generates increased lift and allows the skydiver to glide through the air rather than freefalling
- Other activities such as artistic events, accuracy landing, mixed formation skydiving, etc.)<sup>9</sup>

### License to skydive

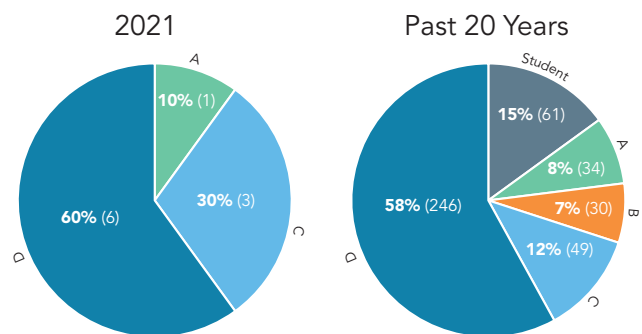
In 2001, the FAI’s International Parachuting Commission (IPC) agreed on a worldwide standard of International Parachuting Certificates of Proficiency. These licenses are recognized internationally and are the most widely used skydiving certification system around the world. FAI member national skydiving associations, such as British Skydiving in the UK and the USPA in the US, are still able to issue national licenses in parallel, enabling them to create their own licensing standards applicable in their own countries.<sup>10</sup>

The International Parachuting Certificates of Proficiency outlines a tiered system with each subsequent license (A through D) requiring more experience and further mastery of skydiving. The basic A License requires that an individual has completed at least 25 jumps and has demonstrated his or her knowledge of skydiving equipment, emergency maneuvers, and other minimum skills.<sup>11</sup> By the time skydivers are eligible for a D License, they have completed at least 500 jumps.

Interestingly, while the risk of injury has been found to be as much as six times higher for students than licensed skydivers, well over half of skydiving fatalities recorded by the USPA are D License holders (see image below).<sup>12</sup> This might suggest

that either these skydivers are making more jumps annually and therefore multiplying their risk or that the more familiar someone is with skydiving, the more willing are to take risks and push the limits. Indeed, most parachuting accidents involve experienced parachutists carrying out particularly dangerous fall maneuvers or attempting to set records.

Figure 2: Fatalities by License. Source: USPA<sup>13</sup>



### Hang Gliding and Paragliding

Modern hang gliding first appeared in 1960s in the US and Australia. Paragliding is a more recent form of gliding sport, quickly becoming popular due to its portable and lighter equipment. There are more than 200,000 paragliding pilots around the world; the sport is particularly popular in Europe.

There are currently no global statistics on how many hang gliding and paragliding flights are made per year, but numbers seem to be on the rise. In the US, the number of paragliding memberships with the United States Hang Gliding and Paragliding Association (USHPA) is increasing.<sup>14</sup> The popularity of hang gliding, on the other hand, is significantly declining as the hang glider pilot population ages.

Legally, you do not need a license to paraglide in most countries. However, training at an official flight school is generally expected. For example, the USHPA offers training courses and rates pilots from one to five (beginner, novice, intermediate, advanced, master pilot). All US locations that are covered by USHPA site insurance require that pilots meet a minimum rating, typically intermediate or higher.



The FAI established an internationally recognized description of pilot competencies that allows pilots to fly in other countries with their local rating as long as they adhere to all other local regulations. Oftentimes, pilots will also need to join the local association in order to be eligible for insurance coverage.<sup>15</sup>

### BASE jumping

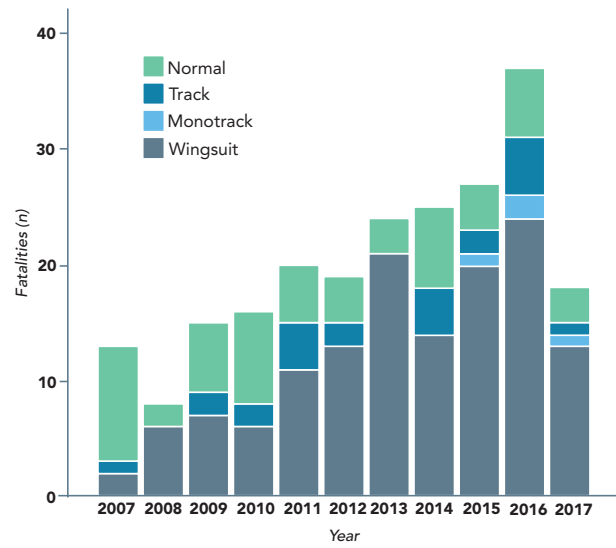
BASE is an acronym for “Building, Antenna, Span, Earth,” which is meant to represent all the surfaces you might parachute from in the sport. (“Span” refers to bridges and “earth” refers to cliffs or ledges.) New BASE jumpers are recommended to start by learning to skydive before transitioning to BASE jumping; however, with no regulatory restrictions, licensing, or certification process, there is no vetting process. Anyone can BASE jump if they have the right gear – which can lead to people indulging in thrill-seeking behavior with no real experience or understanding of the extent of the risks they are facing.

While skydiving fatalities have been trending down, BASE jumping fatalities are continuing to increase. One study from Norway found that the risk of injury and fatality was five to eight times higher for BASE jumping than for skydiving. The study reported a fatality rate of one in every 2,317 jumps and a nonfatal accident rate of one in every 254 jumps.<sup>16</sup> This has been explained by the fact that because “BASE jumps are made from lower altitudes than skydives, jumpers generally fall at lower speeds, have far less aerodynamic control, and may lose flying stability.”<sup>17</sup>

Wingsuit BASE jumping, where a webbed-sleeved jumpsuit (a “wingsuit”) generates increased lift and allows the jumper to glide, is even more dangerous. Despite the fact that a minority of BASE jumpers use wingsuits, these account for the majority of fatal BASE jumps. A 2019 study found that of the 223 known BASE jumping fatalities between 2007 and 2017, 137 were wingsuit jumps.<sup>18,19</sup>

Another potential factor is how many jumps are being made. While skydivers will rarely jump more than four times in a day (it takes time to prepare

Figure 3: Source: BASE Jumping Fatalities Between 2007 and 2017. Source: Wilderness & Environmental Medicine<sup>20</sup>



the gear and plane, fly to elevations, etc.), BASE jumpers might jump as many as 10 or more times in one day. Bouchat and Brymer suggest that “multiplication of jumps might lead to a multiplication of the risk, especially for technically and physically ill-prepared jumpers.” Due to the extremely elevated level of risk involved in BASE jumping, participation should typically be excluded from coverage.

### Bungee jumping

The modern form of bungee jumping, which entails jumping from a height while secured by a harness and bungee cord, got its start in 1979 when members of Oxford Dangerous Sport Club performed a few jumps from the 80-meter-high bridge in Bristol, England.<sup>21</sup> Though safety equipment rarely fails and there are relatively few fatal accidents in bungee jumping (one in 500,000), suddenly being pulled from freefall and rebounding can easily lead to injury, especially in the eyes, spine, or neck.<sup>22</sup>

Bungee jumping does not require any license nor experience for jumpers. There are, however, some restrictions regarding age and weight. Individuals with certain pre-existing health conditions such as





abnormal blood pressure, pregnancy, respiratory issues, previous injuries in leg, head, back, etc. should speak with their doctor before bungee jumping.

The first time an insured tries bungee jumping will typically fall within the scope of coverage, but after this first jump, bungee jumping is usually also excluded in underwriting guidelines. This is because evidence has shown that repeated bungee jumping can lead to chronic and neurological health problems, increasing the risk of an adverse outcome with each jump. Additionally, the type and quality of equipment, which has a direct impact on the successful execution of a safe jump, cannot be known by the underwriter.

### **Aerial sports tourism**

Prior to the Covid-19 pandemic and subsequent bans on international travel, international adventure sports tourism was in its heyday, and some speculate that as travel resumes post-pandemic, we are likely to see renewed interest in aerial and other extreme sports during vacationing. Some believe that stepping away from typical routines and discovering a new country seems to make people more open to the idea of trying new and more extreme sports. Others are inclined to say that individuals with a higher baseline risk tolerance are the same people who are most likely to seek out risky activities while on vacation.

A Google search for “extreme adventure tourism” turns up dozens of listicles all claiming to have the inside scoop on the hottest vacation adventures. At the tops of those lists –recommended by *Condé Nast Traveler*, *CNN*, *Time Out*, and other well-known publications – are paragliding, bungee jumping, and even BASE jumping. Some companies even offer bungee jumping into an active volcano.<sup>23</sup>

Scientific research on thrill-seeking vacationers taking to the air is rather limited, but some studies (though admittedly based upon a small sample size) have found that a large proportion of the injuries seen from aerial sports are tourists.<sup>24</sup> Other studies suggest that price competition among tourist-oriented extreme sports companies can lead to cutting corners on safety measures.<sup>25</sup>

Many of these tourists will not continue with the sport once they return home, but what do these extreme excursions mean for those who already have health and life insurance? If something goes wrong during a one-time jump, are they still covered?

Travel insurance offers one potential solution as it covers many types of extreme aerial sports activities, either included in the standard package or as add-on options.





## Risks Associated with Aerial Sports

Despite being considered extreme sports, aerial sports have a low entry barrier. Almost anyone can participate, even those with certain disabilities or medical conditions that would make it impossible to participate in other extreme sports. This relatively low requirement could, however, expose participants to a higher risk of injuries and death. With such low entry barriers, are certain demographics at higher risk than others? And how do risks compare among different types of aerial sports?

Research has found that male skydivers had a five-times higher fatality rate than women and that, while student skydivers had a six times higher risk of injuries than experienced skydivers, the most severe injuries tend to occur among licensed skydivers.<sup>26,27</sup> This is likely because more experienced skydivers make more frequent and far riskier jumps, particularly if they are participating in competitions, performing aerobatic stunts, or “skyboarding” or “skysurfing.”

In the following section, we will discuss the most common risks of injury reported in aerial sports.

### Risks posed by common injuries of aerial sports

#### Fractures

All aerial sports come with a risk of fractures, particularly high-impact landing at high speeds or when landing on uneven ground or being dragged by the parachute. Ankle sprains and fractures are the most common types of parachuting-related injuries, based on a survey of military parachute-related injuries.<sup>28</sup>

#### Ocular injuries

The high-altitude nature of aerial sports can pose risks to a jumper’s ocular health due to intense air pressures. According to one study, 84.2% of bungee jumpers suffered from petechial subconjunctival hemorrhages where the delicate blood vessels in the eyes burst.<sup>29,30</sup> These injuries

might also occasionally be reported by skydivers if they experience a particularly rough parachute deployment. These types of injuries are not life threatening but can have an impact on quality of life and lead to a temporary or permanent disability.

#### Spinal injuries and artery dissection

Sudden falls, bouncing, or landing actions that accompany aerial sports can cause traumatic spinal and/or neck injuries. These risks are particularly high among bungee jumpers, as the intense pressures their bodies encounter when the bungee cord abruptly pulls their bodies back up. Although these injuries are treatable in most cases, they can be severe and irreparable, leading to the jumper’s temporary or permanent disability such as paraplegia or quadriplegia.

This same freefall and rebound can also cause traumatic carotid artery dissection, which is abnormal formation of a tear along the inside wall of an artery.<sup>31</sup>

### Risks posed by existing conditions

Participating in many types of extreme sports is usually discouraged for individuals with existing and chronic medical conditions such as cardiovascular disease. Aerial sports facilities, however, typically exclude very few people wishing to participate. Often people are able to participate despite a wide range of physical and medical limitations such as paralysis, blindness, or amputations. Although an argument could be made for the mental health benefits gained from these outlets, from an underwriting perspective, certain medical conditions still increase the risks involved with aerial sports.

#### Hypertension and cardiovascular disease

When people participate in aerial sports, their bodies are flooded with adrenaline, causing an increase in heart rate and blood flow. For those already diagnosed with hypertension, cardiovascular disease, or an irregular heartbeat,



these activities can put undue stress on the heart. Although people with these conditions are not automatically denied from participating in such sports, it is highly recommended that they consult with their doctors before making the decision to engage in these sports.

In general, extreme aerial sports are contraindicated for patients with atherosclerotic cardiovascular diseases including post-myocardial infarction, post stroke, and symptomatic peripheral artery disease. As these are some of the most frequent causes of morbidity and premature deaths worldwide, applicants with these conditions need to be evaluated carefully.

### **Diabetes**

Being diagnosed with diabetes does not preclude you from participating in aerial sports. Hypoglycemia (low blood sugar) is a major risk for patients with diabetes treated with insulin (type 1 and type 2 diabetes) or oral agents that promote insulin secretion as sulfonylureas (type 2 diabetes). Continuous glucose control monitoring provides better safety for patients with insulin treatment. Diabetes should be well controlled before choosing to make a jump as high or low blood sugar can cause a loss of consciousness.

### **Psychological disorders**

Contrary to a widely held belief that skydiving or bungee jumping will cause extreme anxiety and traumatic experience, aerial sports activities might have positive psychological and emotional effects on people with mental disorders. While there is currently insufficient research available to draw a reliable conclusion, experts suggest that benefits of skydiving range from stress relief and increased self-control to a sense of achievement, confidence boost, and even a new perspective on life. Skydiving has even been used as a therapy treatment for veterans with PTSD (Post Traumatic Stress Disorder) in Texas.<sup>32</sup>

### **Obesity**

The weight limit ranges for aerial sports vary by the type of sport, location, facility and other factors. In the United States, for example, the common weight limit for skydiving is 225-275 pounds (102-125 kg) while the limit for bungee jumping is 260-280 pounds (118-127 kg).<sup>33,34</sup> This restriction is far above the general obesity standard (BMI 30+), allowing the majority of obese people to participate in aerial sports.

There is no data to that shows the mortality and injury rate of the obese population who were engaged in extreme aerial sports or suggests that this rate is higher than that of the general participant population.

So, while obesity should be a general consideration when underwriting a policy, there is no evidence to suggest that it increased the risks associated with aerial sports.

### **Epilepsy**

Skydiving is generally not recommended for people with epilepsy, a neurological disorder that causes seizures, because it could be life threatening in case of a seizure occurrence.

Preliminary research suggests that at high altitudes seizure risks in a seizure-prone person may be higher than for other individuals. This is because the atmospheric changes that occur at a higher altitude can provoke seizures. One study also indicates that hyperventilation is efficient to activate epileptic seizures in epileptic patients.<sup>35</sup> This may be a higher risk in the individuals who are tapering their use of anti-epileptic drugs. We may think that an individual's seizures are well controlled because they are reducing their medication dosages, but when it comes to skydiving, this may actually be riskier than an epileptic whose prescription has not changed.





### **History of dislocations of joints**

Shoulder dislocation is a risk during skydiving activity. General practitioners would advise against skydiving activity if patients have recurrent shoulder dislocation. However, from the current available evidence, if patients have had operations to reduce shoulder dislocation, general practitioners may advise patients that it is safe for them to undertake tandem skydiving. Nevertheless, the timing of skydiving activity postoperatively is less certain, although some have suggested that five years after surgery no increased risk of shoulder dislocation from tandem skydiving.<sup>36</sup>

### **Pregnancy**

Regulations governing whether pregnant women can skydive or engage in other aerial sports vary. Some ask for a doctor's permission, some permit if the person is a licensed or experienced skydiver, and others recommend not to jump during pregnancy at all. Medically speaking, participating in aerial sports during pregnancy is a high-risk factor for injuries and unfavorable pregnancy outcomes.<sup>37</sup>

### **Age**

To safely engage in extreme aerial sports, it is essential that participants are in excellent health. Any extreme sport, including aerial sports, could impose excessive pressure and workload on the cardiovascular system. Therefore, individuals above 50 years old with no documented risk factors or younger participants with associated risk factors such as smoking, diabetes, hypertension, dyslipidemia and so on should have appropriate medical tests such as a cardiac evaluation before participating in these activities.

Age-related osteoporosis can affect an individual's ability to jump. For these individuals, suffering an injury or experiencing a bone fracture is a skydiving health risk. However, there is no maximum age limit on jumping (only the minimum age requirement of 18), and most individuals are fully capable of jumping well into their golden years. Though, it is recommended that older age people take an exercise test and a calcium score before engaging in any extreme-risk sports.



## Implications and Recommendations for Underwriting

When compared to other extreme sports, underwriting aerial sports poses unique challenges even for experienced underwriters because the level and frequency of each person's risk varies considerably.

Professional or semi-professional jumpers/gliders, even though their numbers are small, are at the highest risk. One must learn the risks associated with each type of aerial sport and apply the correct assessment to each category.

Underwriters should understand the type of equipment being used. If we consider parachuting, for example, the risk will be decreased if the applicant is performing automatic opening jumps or tandem descents, which have a lower accident rate.

Parachutists and those who participate in other aerial sport competitions make a large number of descents per year, and those who take part in particularly dangerous disciplines such as skyboarding or skysurfing should be considered in a higher risk category. Aside from these considerations, underwriters should also consider how an applicant's physical fitness and medical history might impact his or her ability to safely participate in aerial sports.

Now that we have a better understanding of the risks associated with various aerial sports and have reviewed typical considerations underwriters should be aware of, let us return to the two case studies (amateur and professional) we presented at the beginning of this article and see how we can assess their risks.

### Case Study 1: Amateur

Ken, age 49, is preparing to go skydiving at a famous skydiving site in New Zealand for his upcoming 50th birthday. This will be his third time skydiving, as this has become a tradition to celebrate every 10-year birthday, starting at age 30 with his second flight at age 40. This flight will be a tandem descent with an instructor; the parachute will deploy automatically and the instructor will navigate the descent. This is a recreational activity with an organized association, and he has never had any accident or injury on any of his past flights. He wants to buy a life insurance policy before turning 50, not because he fears he may need death benefits because he is skydiving but to provide college funds in the future for his young children. He knows that the younger the insured is, the less expensive his insurance premium would be.

At age 49, Ken now has some medical issues he did not have when he went skydiving at 30 or 40 years old. He is overweight (101 kg / 222 lbs, 180 cm / 5'11 ft, BMI 31.2) with hypertension (average blood pressure around 150/95) that is controlled with medication. He has impaired glucose tolerance, but he is not yet diagnosed with diabetes. His most recent fasting blood sugar during his follow-up two months ago was 100 HbA1c 6.2%.

### So, how should we assess Ken's risk?

In terms of life risks related to skydiving itself, we could evaluate that Ken's flight is relatively safe or even one of the safest ones among all other skydiving activities. He practices it only once in 10 years. His lack of experience is not concerning since he has opted for a tandem jump with an instructor. Another important factor here is that he is equipped with an automatic parachute opening. This means that the activity is not for a record challenge or delayed parachute opening, which would have been considered of much greater risk.





In Ken's case, we should not forget to look simultaneously into his underlying medical conditions. The first thing to consider is his obesity. In many cases, there is a maximum weight limit due to the maximum weight allowance of the harness and to prevent limb injuries at landing. He might be able to not fly with certain clubs; in New Zealand, for example, the weight limit is around 100 kg. For cardiovascular conditions such as hypertension and impaired glucose tolerance, we recommend that he first goes to see his doctor and obtain a certificate that the altitude he is planning to jump from would not cause problems or complications related to hypoxia.

Ken's history of anxiety has very little to no impact on the risks involved with skydiving. He should be open with his skydiving instructor if he is feeling overly anxious before the jump and postpone the jump in this case. But given that he has been skydiving before and knows what to expect, it is unlikely that this is cause for concern.

Whether death caused by already envisaged skydiving would be covered or not will depend on the stipulations of the life insurance product. You would also want to discuss with the chief underwriter or consult with risk management experts if the related risk could be absorbed with the standard rate or with some loadings, reviewing the claim experience from those already underwritten as regularly practicing skydivers. Some insurers may want to postpone the life cover until Ken has done the flight and offer a standard premium afterward. Some may want to exclude the death or total permanent disability benefits that could be caused directly or indirectly by skydiving but accept the cover anyway before the jump.

## Case Study 2: Professional

George, age 45, is a professional parachutist (holder of an advanced level certificate) who wishes to buy a life insurance policy. He is a world-renowned parachutist who specializes in delayed parachute opening jumps and participates in competitions that sometimes involve record attempts. He makes upwards of 800 jumps each year. Even though George is in good health for his age, he has started to feel the physical limit as he gets older and therefore envisages reducing the frequency of his activity. Within the next two or three years, he plans to withdraw from record attempts completely, then from the competitions as well, before the age of 50.

As for his medical history, Ken suffered a minor ocular injury during a particularly rough parachute deployment when he was 30. The injuries healed on their own and have not caused further concern. He also had an ankle injury at the age of 32, when he landed on uneven ground and suffered compound fractures in both ankles. He was admitted to the hospital for 30 days and underwent surgery, followed by one year of rehabilitation to be able to walk normally again. Today, both ankles have healed without further issues, but plates and screws remain implanted in the ankle bones. There is no issue in his activities of daily living.

### How should we assess George's risk?

Being engaged in extreme sports as a professional can increase the risk of death compared to those who do not practice it at all or enjoy a one-off jump. For professionals, insurance premiums could be higher depending on the number of annual flights, the type of qualification or certifications that the applicant has or if record attempts are involved and so on. George, as of now, jumps 800 times a year, with some challenges to push back the record in some competitions. The number of annual jumps needs to be taken into consideration for some loadings, and for some insurance companies, the death or injuries caused directly or indirectly from this activity will likely be entirely excluded. If an exclusion cannot be applied due to the product structure, the life insurance policy may be declined.



However, when he leaves the record attempts and reduces his annual number of jumps, he may have more access to insurance coverage.

How do we evaluate the ankle injuries in George's case? As these injuries have healed and do not impact either Ken's day-to-day life, nor his ability to jump, there is little reason that this should weigh heavily in an understating decision. Furthermore, because this was a one-time event, we can assume that Ken has learned from the experience and

corrected any mistakes he made. However, major injury can impact an individual not only physically but mentally as well. The underwriter might consider whether there are any signs of mental health concerns in Ken's application.

The above assessments are reference-only examples based on fictional factors. Please refer to the local underwriters of your market for further assessment.

*"Interest in aerial sports such as skydiving and paragliding has been increasing recently in Spain. Even new modalities such as paramotoring and hot air ballooning have been incorporated. Although there is no doubt that skydiving and paragliding are the most popular aerial sports in Spain, thanks to our varied orography of mountains, islands and coast, as well as a mild climate that favors the practice of these sports. Sports tourism is also a growing phenomenon. Fortunately, accidents, although always viral and spectacular, are rare due to the training and safety measures surrounding these aerial activities. We do not often receive life insurance applications declaring this practice, as many people have specific insurance covering this risk. However, given the growing interest in these sports and their growing accessibility, we foresee an increase in such underwriting."*

Maite Manzano  
Medical, Financial and Claims Underwriter  
SCOR Iberia

*Aerial sports are not uncommon in Canada but haven't reached mainstream appeal. This is especially true for with paragliding/hang gliding as there were only 850 licensed hang gliding and paragliding pilots in Canada in 2006 with 300 in BC and 300 in Quebec.*

*During the pandemic period there was a decrease in participation in these sports given the restrictions in Canada. However, we are seeing a resurgence in participation in skydiving, with participation in hang/paragliding remaining fairly stable, as we begin to emerge from the pandemic. With the resumption in the sport, or perhaps a desire of people to "seize life" after a period of pandemic related lockdowns we are seeing an increase in participation numbers, and, unfortunately, in the number of fatalities as well. This summer (2022) in Canada four skydiving accidents occurred in the span of only three months, up from the average of one per year. But with improved technologies and safety standards of the last decade we are seeing an overall decrease in the number of fatalities/accidents in both sports.*

James Dixon  
Senior Underwriter Consultant  
Canada





## Conclusion

Aerial sports, as we have seen in this report, attract many adventure seekers worldwide who are passionate about the one-of-a-kind thrills that aerial sports offer. While aerial sports might not pose as many risks as it would seem at first glance, it is nonetheless important to consider the various health and injury-related risks involved. Life insurance underwriters need to consider these risks to ensure that they can be correctly reflected in their underwriting decisions.

As global travel returns to pre-COVID-19 levels, the number of people participating in these extreme aerial sports is expected to increase. Since these sports have high variations in terms of kind of activity, location, level of experience, frequency, health conditions and so on, it is highly critical that underwriters understand each applicant's circumstances and associated risks.

For further information or underwriting guidance related to these aerial and other extreme sports, please reach out to your local SCOR underwriting contact.

We invite you to follow this ongoing series as we tour the world of extreme sports, tapping into SCOR's network of expert insurance professionals – and amateur athletes – whose passion and knowledge allow SCOR to break through common misconceptions and offer a better understanding of the true risks surrounding extreme sports for amateurs, professionals, and – occasionally – even spectators. We will also explore the most recent trends and the implications of new medical developments, predict how a changing climate and other evolving factors might impact these sports, and highlight the hidden links between Life and Health and Property and Casualty coverage in the world of extreme sports.

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