Aviation, Avocations, and Athletes

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Director

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Underwriting Consultant

September 13, 2017
Overview

- Professional athletes
  - Team and individuals

- Aviation

- Avocations
  - Vehicle racing
  - Mountain climbing
  - Scuba diving
# Case Study

## Cover sheet

<table>
<thead>
<tr>
<th>Section I</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insured Name</strong></td>
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<tr>
<td><strong>DOB</strong></td>
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<tr>
<td><strong>Gender</strong></td>
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<tr>
<td><strong>Age</strong></td>
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<tr>
<td><strong>Place of Birth</strong></td>
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<tr>
<td><strong>Place of Residence</strong></td>
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<tr>
<td><strong>Smoker</strong></td>
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<tr>
<td><strong>Total Risk</strong></td>
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<tr>
<td><strong>Basic Plan</strong></td>
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<tr>
<td><strong>Term Rider</strong></td>
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<tr>
<td><strong>Product</strong></td>
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<tr>
<td><strong>Impairment</strong></td>
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<tr>
<td><strong>MIB Codes</strong></td>
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<td><strong>MD Consult</strong></td>
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<tr>
<td><strong>Underwriter</strong></td>
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<tr>
<td><strong>NYL Rating</strong></td>
</tr>
<tr>
<td><strong>RNA</strong></td>
</tr>
<tr>
<td><strong>Total Rating</strong></td>
</tr>
</tbody>
</table>
Case Study

T.I.R

Within the last twelve (12) months, did you engage in or do you intend to engage in any of the following? (Skin diving, Sky diving, Scuba diving, Helicopter skiing, Auto Racing, Motorcycle racing, Cave exploration, Hot air ballooning, Power boat racing, Snowmobile racing, Mountain climbing, Rodeo Riding, Ultralight, Hang gliding, Any other type of vehicle racing)

Yes~ DOES HAVE CERTIFICATION FOR RECREATIONAL SCUBA DIVING ONCE EVERY SO MANY A COUPLE TIME A YEAR

OWNER OF MANY CAVE, AND HE IS A CAVE EXPLORER

Which sports?

Scuba diving, Cave exploration
## Case Study

### Avocations Questionnaire: Scuba

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) SCUBA Diving and/or Skin Diving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. What is your certification?</td>
<td>□ Basic □ Open Water □ Advanced □ Specialty □ Dive Master □ Instructor □ Master Instructor □ Master Scuba Diver □ None</td>
<td></td>
</tr>
<tr>
<td>2. How many dives have you done in the last 12 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How many dives do you plan in the next 12 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What is the average depth you dive?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. What is the maximum depth you have dived?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Do you do any diving for work or as part of your job?</td>
<td>□ Yes □ No If “Yes”, please provide details.</td>
<td></td>
</tr>
<tr>
<td>7. Do you do any specialty diving?</td>
<td>□ Yes □ No If “Yes”, provide type: □ Wreck □ Cave □ Salvage □ Ice □ Other</td>
<td></td>
</tr>
<tr>
<td>8. Do you ever dive alone?</td>
<td>□ Yes □ No If “Yes”, please provide details.</td>
<td></td>
</tr>
</tbody>
</table>
Avocations Questionnaire: Cave Exploration

F) Cave Exploration (Spelunkers)
1. How many times have you gone caving in the last 12 months? 50
2. How many times do you plan on caving in the next 12 months? 50
3. Have you engaged in any underwater activities during caving? □ Yes  □ No  If “Yes”, please provide details.
Case Study

Questions we asked in initial wire

- PLEASE ASK THE PROPOSED INSURED THE FOLLOWING REGARDING CAVING/SPELUNKING.
  - 1. WHERE?
  - 2. WHAT SAFETY PROCAUTIONS ARE USED?
  - 3. EQUIPMENT USED?
  - 4. DEPTH INTO THE CAVES?
  - 5. ALONE OR WITH A GROUP?
  - 6. BELONG TO A CLUB?
  - 7. HAVE THE CAVES BEEN PREVIOUSLY EXPLORED, DEVELOPED AND ANALYZED FOR STABILITY?
  - 8. ANY EXPLORATION THAT INVOLVES GOING INTO OR UNDER WATER?
Platinum case: reply from Agt: Answers from client: Spelunking, where? He and his friends do their cave exploration on this property. How much experience does he have? He has been spelunking for over 40 years (since he was a young boy). Safety precautions? He always goes with a group. They wear head protection gear, safety harnesses, guide ropes, and proper clothing and shoes. Safety is thoroughly emphasized. The caves are owned by The caves they explore are mapped and no deeper than 200 feet with horizontal branches. The horizontal branches can go for miles. Affiliations? National Spelunking Society (long time member) Michael Cheslek General Office Management.
Case Study

Underwriter performed an Internet search
Case Study

Eventually found …

After groping through a maze of subterranean passages, we surfaced into a new cave segment. He quickly retums with fantastic news.

Later, we also don SCUBA gear, retraces our route and together they explore and survey over 1/3 mile of stupendous breathtaking passage. Also names this new branch of Goliath's Cave the "Iconoclast" section.

Click here to read the entire account.
Case Study

And another ...
Case Study

The icing on the cake …

“Having had more than his share of near death experiences, he stresses that cave exploration is extremely dangerous.”
Case Study

What’s my point?

- Internet is your friend.
- People love to talk about their hobbies, share things on Facebook.
- Verify an applicant’s answers with a quick search.
- Even amateur vehicle racers’ race results, classes, vehicle information can be found online.
A professional athlete is a person who earns his or her income by playing/competing in athletics

- Lifestyle
- Exposure
- Red flags
- International athletes
Team and Individual Athletes

- **Team sports** for this presentation refers to the 4 major U.S. sports: National Football League, Major League Baseball, National Basketball Association, and the National Hockey League
  - Travel as a team (catastrophic coverage)
  - Team coverage or personal coverage

- **Individual sports** refers to golf, tennis, vehicle racing, etc.
  - May take international trips to compete
  - Not traveling with a team
Lifestyle

- Their wealth allows them to do a lot more than most people
- Fast cars, parties, guns, drugs
- Check for any past adverse history
Purpose of Coverage

- Personal
- Team-owned/contract coverage
- Endorsements
- Persistency issues
Red Flags

- **Financials**: accumulated wealth? amount applied for justified?
- **MVR**
- **Labs/HOS**: alcohol/drug criticisms?
- **Age of applicant**: rookie or veteran?
- **Internet searches**: positive and negative activity
- **Medical impairments**: athletes put extra stress on their bodies
International Athletes

- Concerns with home location and travel destinations
- Unable to track team capacity with all of the new teams being created
- Safety of the players (football/soccer)
Case Study 1

- 26-year-old NBA star
- Received age/amount requirements along with the team physician and personal physician medical records
- PCP told him that if he didn’t quit playing basketball he would die
- Player responded, “Please don’t tell my parents”
Case Study 2

- 27-year-old NFL player
- Hx bilateral pulmonary emboli 2 years ago s/p hip surgery
- Non-provoked DVT 1 year ago, Tx Xarelto until recently, negative hypercoaguable workup
- Dr. recommends Xarelto prophylactically in high risk situations (prolonged immobilization, >6 hour plane flights, hospitalizations, fractures, surgeries)
- Traveling to London to play a football game this upcoming season
Conclusion

- Watch for red flags with lifestyle issues
- Even players that appear okay may have red flags
- Concerns with total exposure and total team exposure
- Purpose of the coverage
- International concerns
Questions?
Aviation

- As of 2013, there were 599,086 active certified pilots in the United States; declining slowly, with peak in 1980 of 827,000.

- In 2010, 450 deaths in general aviation crashes (all non-commercial flights). Fatality rate of 1.10 per 100,000 flight hours.

- Aircrafts without engines have highest accident and mortality rate.

- Gliders (most do not have engines) have worst accident experience, fatality rate four times average.

- Alaska and mountainous states in the Northwest are the most dangerous regions in the U.S. for aviation.

- Older the aircraft, more likely to have an accident.
Aviation Certificates

“Taxiing down the runway…”

- Student Pilot
- Sport Pilot
- Recreational Pilot
- Private Pilot
- Commercial Pilot
- ATP: Airline Transport Pilot
Pilot Certificate Comparison Chart

“Off to the wild blue yonder…”

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Student</th>
<th>Sport</th>
<th>Recreational</th>
<th>Private</th>
<th>Commercial</th>
<th>Airline Transport</th>
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<tbody>
<tr>
<td>Number active in US</td>
<td>72,280</td>
<td>3,248</td>
<td>234</td>
<td>211,619</td>
<td>125,738</td>
<td>144,600</td>
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<td>(as of 12/31/2009)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Age Requirement</td>
<td>16*</td>
<td>17</td>
<td></td>
<td>18</td>
<td>18</td>
<td>23</td>
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<tr>
<td>Prerequisite</td>
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<td></td>
<td>Student</td>
<td>Private</td>
<td>Commercial</td>
<td>w/IFR</td>
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<tr>
<td>Medical Requirement*</td>
<td>3rd Class</td>
<td>US Driver's License Only</td>
<td>3rd Class</td>
<td>3rd Class</td>
<td>2nd Class</td>
<td>1st Class</td>
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<td>Training (minimum hrs)</td>
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<td></td>
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<tr>
<td>Total hours</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td>1500</td>
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<td>Flight Instruction</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>---</td>
</tr>
<tr>
<td>Solo</td>
<td></td>
<td></td>
<td>Must have to solo</td>
<td>5</td>
<td>3</td>
<td>10</td>
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<tr>
<td>Night</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>8</td>
<td>100</td>
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<tr>
<td>Instrument</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>75</td>
</tr>
</tbody>
</table>

*Except for glider/balloon
Must be able to read, write, & understand English for all certificates
Types of Flying

- Scheduled flights
  - Commercial airlines
  - Business flying

- Nonscheduled flights
  - Charter
  - Air taxi/commuter/on-demand flights

- Forestry
  - Firefighting
  - Land surveying
  - Crop dusting
  - Sightseeing
Aviation Accident Statistics per 100,000 Flight Hours
Types of Aircraft

Fixed Wing
Types of Aircraft

Ultralight
Types of Aircraft

Glider
Type of Aircraft

Accident rate

![Graph showing accident rates for different types of aircraft from 2000 to 2010. The graph compares fixed wing, glider, helicopter, light sport/lighter than air, and other types of aircraft. Each type is represented by a different line color. The accident rates are measured per 100,000 flight hours.]
Accidents vs. Fatalities

2010 Accident rate

- Other
- Light sport / Lighter than air
- Helicopter
- Glider
- Fixed wing

2010 Lethality%

- Other
- Light sport / Lighter than air
- Helicopter
- Glider
- Fixed wing
Scheduled Flying

- Scheduled flights are generally safer because there is time to plan for the flight and prepare the crew and the plane.

- Aircraft undergo scheduled maintenance, and there are limitations for the crew.

- Pilots in command are ATP-certified and must follow strict regulations:
  - Most pilots for commercial airlines fly about 400 hours per year.
Nonscheduled Flights

- Pilots will fly as much as possible; some fly more than 500 hours per year
- Aircraft maintenance may not be routine or up to the standards of commercial airlines
- Aircraft can have more hours of use in a shorter period of time
Forestry Flying

- **Concerns with flying conditions**
- **Concerns with terrain**: mountains, valleys
- **Type of aircraft used**: converted or made for the type of flying it is enduring?
  - **Crop dusting**: pilots can use converted planes or planes specifically designed for this activity – very dangerous because of power lines and trees, not being able to pull up
  - **Firefighting**: requires flying into dangerous areas to spray fires or prevent fires from spreading
  - **Sightseeing**: concerns about terrain; in trying to get close to the sights the pilot can sometimes get too close
Medical Conditions

- Certain medical and non-medical conditions are an added concern; AER may be needed
  - CAD
  - Uncontrolled DM
  - Mental/emotional disorders
  - Syncope/CVA history
  - Alcohol and drug criticisms
  - MVR
Conclusion

- Licensing, experience, and type of flying are all key considerations for aviation.
- Medical impairments can impact aviation and whether an AER should be used instead.
- Habits can be a concern with aviation.
- Flying locations.
Case Study 1

- 63/M applying for $2,000,000
- Business owner
- AST 1.3x, ALT 2.4x, GGT 1.6x
- APS: no etoh concerns in aps
- Remote history of DUI 10 years ago
- Flies 75 hours/year and has 250 total hours of experience
Case Study 2

- 57/M applying for $1,250,000
- Private license
- Last flight 5 years ago - states no intention of flying in the future
- Medical certificate is current
- No medical concerns
- MVR has 1 speeding ticket in the last 3 years
Case Study 3

- 42-year-old male
- No medical problems
- Pilot, commercial license with IFR
- Employed by Net Jets, which is a time share for airplanes; nonscheduled flights, but planes are owned and maintained by a third party, so same safety standards as scheduled airlines
Avocations

- Vehicle racing
- Mountain climbing
- Scuba Diving
Professional Vehicle Racing

Due to safety improvements auto racing fatalities have decreased in recent years

HANS-head and neck safety system
Drag Racing

- Usually two cars at a time, race to be first to cross a set finish line.
- The race follows a short, straight course from a standing start over a measured distance, most commonly ¼ mile.
- Cars can be regular production cars using normal gasoline or specially designed cars that use high octane fuel resulting in very high speeds that may be slowed down by a parachute once they finish.
Sprint Car Racing

- Open wheeled, single seated cars custom built for racing on short oval dirt or paved tracks.
- Roll cages have greatly improved safety.
- Cars can be winged or non-winged.
Stock Car Racing

- Cars come in a variety of types – from factory produced cars without modifications to NASCAR vehicles which are highly modified.
- Several classes – Late Model, Super Stock, Street Stock.
- Paved or dirt tracks.
- Speeds can be up to 200mph.
Sports Car Racing

Sports Car Club of America (SCCA) is the sanctioning body that supports road racing, rally, and autocross in the U.S.

- **Club racing**
  - Drivers race wheel-to-wheel on either a dedicated track or temporary street circuits
  - Racing license is required
  - Modified production cars (lightly modified to heavily modified) and designed “formula” and “sports racers” cars can be used in club racing
    - Most participants are unpaid amateurs that may go on to professional careers

- **Autocross**
  - One car at a time
  - Running a course laid out with traffic cones on a large paved surface, such as a parking lot or airport runway
    - ProSolo (professional autocross) runs two cars at a time in a drag racing style
  - Road racing
  - Run on open, public roads
  - Races of precision and navigation
  - Driving on time and arriving at checkpoints with proper elapsed time from the previous checkpoint
    - Checkpoints are not known
Types of Cars

- **Formula**
  - Fastest SCCA class, with speeds greater than 150 mph
  - Similar to Indy cars: single-seat, open-wheel design built to detailed specifications for weight, size and engine displacement
Types of Cars

- Sports Racers
  - Road-racing cars with enclosed fiberglass or plastic bodies
Types of Cars

- **Production Racers**
  - Unmodified or very lightly modified cars race each other; protective roll cage and run race tires

- **Classes**
  - Based on make of car
Types of Cars

- **Showroom Stock**
  - Vehicles less than 5 years old with only safety equipment modifications
Types of Cars

- **Grand Touring**
  - Highly modified for racing
  - Two-seaters with enclosed wheels
  - Endurance racing

- **Classes**
  - GT1(GTS), GT2(GT), GT3, GT4, American LeMans, Trans Am
How to Classify

There are many different racing classes, sometimes hard to properly classify.

- Consider the type of track – road course, off-road, drag strip, dirt oval
- Length of event – a few laps, 24 hours
- Make/model of the car
- Horsepower, engine size, and the average and maximum speeds obtained
Medical Concerns

- **Medical impairments**: could influence racing ratings
- **MVR history is key**: do they keep the racing on the track, or practice every day?
- **Alcohol and drug history**: watch for criticisms in the file
Resources

- The Internet is a great resource
  - Even amateur racers are listed with their points and statistics from their last race
- Reinsurance companies with experts are a resource
- The applicant can be a resource
  - Ask more questions; people love to talk about their hobbies
Conclusion

- Use your references to help determine the rating classifications
- Watch for red flags throughout the case
- Watch for medical impairments that can inhibit a person’s ability to participate in the activity
Case Study

- 30/M from California
- Admits to drag racing 20 times per year
- Max speed 200mph
- Multiple MVR violations
- Tried to say that street racing was legal in Los Angeles
- 5 speeding tickets, 1 accident, 1 racing violation
Questions?
Mountain Climbing

- Types of Climbing
- Grading the Climbs
- Mountaineering Summary Graphs
- Mountains
Traditional Climbing

- Ascending rock walls that are protected with gear that is placed and removed by the climbing party

- Requires great deal of skill and technical knowledge to be done safely
Sport Climbing

- Uses permanent anchors placed in the rock
- Emphasizes gymnastic movement, difficulty, and safety
Bouldering

- Short and often difficult climbing on boulders and small cliffs without a rope or support
- Routes typically below 25 feet
- No ropes or harnesses
- Only equipment used is climbing shoes and helmet (hopefully!)
Top Rope

- One of the **safest** forms of climbing
- Rope is always anchored above you, so if you fall you only fall a short distance
- Great way to learn the ins and outs of safety while climbing
- Advanced climbers use this type of climbing to focus on technique, strength building or endurance
Lead Climbing

- Leader climbs up with the rope hanging below while the second climber belays and hands out the rope underneath.
- Typically used when more than one pitch is involved.
- Leader climbs up to the pitch and attaches an anchor.
- The leader belays the second until he or she reaches the anchor.

Belaying: attach to something secure and exert friction on a climbing rope.
Aid Climbing

- Style of climbing that uses devices and equipment to make upward progress
- Used on big walls where free climbing is extremely difficult or impossible
- Emphasizes physical and mental endurance
Solo Climbing

- Most pure form of climbing
- No protection from a fall
- Routes well below the climber’s limitations
- New form includes soloing ascents over water, which acts as protection from falls
Ice Climbing

- Scaling frozen waterfalls and icy gullies using crampons and ice tools
- Weather conditions contribute to success … or failure
Mountaineering

- Expeditions take days or weeks to complete
- Typically includes a group of climbers led by one guide
- Uses both rock and ice climbing skills
- Typically includes rock climbing equipment and camping equipment
Yosemite Decimal System (YDS)

- 5-class rating system
- Initially developed as the Sierra Club grading system
- Routes rated based on the most difficult move
- Class 6 (not widely used) includes rocks that are extremely shear and smooth and unclimbable without aids
- U.S. typically uses the YDS
Class 5 Sub-classifications

- Indicates relative difficulty within the most difficult class
- Class 5 is where rock climbing begins
- Class 5 is further subdivided based on difficulty
- Subclasses start at 5.1 through 5.15
- 5.10 and above further classified using letters (a, b, c, d)
- Most difficult route would be rated 5.15d
- Average climber typically climbs within 5.6 to 5.10 range
Grades

Indicates the length and seriousness of the route

- Grade I: 1-2 hours
- Grade II: <Half a day
- Grade III: Half a day
- Grade IV: Full day
- Grade V: Two days
- Grade VI: Multiple days
- Grade VII: More than a week
FATALITIES IN MOUNTAINEERING ACCIDENTS IN THE US
BY GEOGRAPHICAL LOCATION, 1951-2006

- California: 19.1%
- Colorado: 13.8%
- Alaska: 11.9%
- Atlantic-North: 9.5%
- Wyoming: 8.3%
- Utah, New Mexico: 3.8%
- Montana, Idaho, South Dakota: 2.1%
- Atlantic-South: 1.6%
- Arizona, Nevada, Texas: 1.2%
- Central: 1.1%
- Washington: 20.6%

Pie chart by Steph Abegg, www.stephabegg.com
FATALITIES IN MOUNTAINEERING ACCIDENTS IN THE US
BY GEOGRAPHICAL LOCATION
(per 1,000,000 people)

1951-2009

Pie charts by Steph Abegg, www.stephabegg.com
The 7 Summits – The Highest on Each Continent

<table>
<thead>
<tr>
<th>Mountain</th>
<th>Location</th>
<th>Approx. Elevation (M/Ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everest</td>
<td>Asia</td>
<td>29,035ft</td>
</tr>
<tr>
<td>Aconcagua</td>
<td>South America</td>
<td>22,841ft</td>
</tr>
<tr>
<td>Denali</td>
<td>North America</td>
<td>20,320ft</td>
</tr>
<tr>
<td>Kilimanjaro</td>
<td>Africa</td>
<td>19,340</td>
</tr>
<tr>
<td>Elbrus</td>
<td>Europe</td>
<td>18,481 (western)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18,442 (eastern)</td>
</tr>
<tr>
<td>Vinson</td>
<td>Antarctica</td>
<td>16,067</td>
</tr>
<tr>
<td>Carstensz Pyramid</td>
<td>Australia</td>
<td>16,023</td>
</tr>
</tbody>
</table>
# 8,000 Meter Club – The 14 Highest Mountains on Earth

<table>
<thead>
<tr>
<th>Mountain</th>
<th>Location</th>
<th>Approx. Elevation (M/Ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Everest</td>
<td>Himalayas</td>
<td>8,850 / 29,035</td>
</tr>
<tr>
<td>K2</td>
<td>Pakistan</td>
<td>8,612 / 28,253</td>
</tr>
<tr>
<td>Kanchenjunga</td>
<td>Himalayas</td>
<td>8,586 / 28,169</td>
</tr>
<tr>
<td>Lhotse</td>
<td>Himalayas</td>
<td>8,501 / 27,890</td>
</tr>
<tr>
<td>Makalu</td>
<td>Himalayas</td>
<td>8,462 / 27,765</td>
</tr>
<tr>
<td>Cho Oyu</td>
<td>Himalayas</td>
<td>8,201 / 26,906</td>
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<tr>
<td>Dhualagiri</td>
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<td>Pakistan</td>
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<td>Broad Peak</td>
<td>Pakistan</td>
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<td>Gasherbrum II</td>
<td>Pakistan</td>
<td>8,035 / 26,360</td>
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<tr>
<td>Shishapangma</td>
<td>Himalayas</td>
<td>8,013 / 26,289</td>
</tr>
</tbody>
</table>
Takeaways

- Mountain climbing is a dangerous avocation
- Skills: if the climber is inexperienced, there is more risk, but a person who is very experienced is also a risk because they may be lax and not use proper equipment
- Understand the differences between the types of climbing
- Know what the grade/ratings mean
- Know which mountain(s) the applicant is climbing and the elevation
- What region or country they are climbing in
- Does the equipment used match the type of climbing disclosed?
- Risk takers, thrill seekers?
- Are there any health conditions that are a concern with climbing?
Case Study

- 35/F
- Rock climbs two times a year at Red Rock and climbs in a rock climbing gym year-round
- No medical concerns
- She uses ropes, belays, helmet, and only climbs pre-mapped routes with a maximum height of 5,000 ft.
Questions?
Scuba Diving

More people die each year from peanuts than scuba diving
Scuba Diving

Show me the numbers

- >9 Million recreational SCUBA divers in the United States (some of these people don’t participate in the activity)
- Several hundred thousand new divers are trained annually
- There are more than 1000 diving related injuries annually
- Almost 10% are fatal

- 1 out of every 211,864 dives ends in a fatality
  - 1 out of every 7,692 pregnant women died from complications of pregnancy in 2004
  - 1 out of every 116,666 skydives ended in a fatality in 2000
  - 1 out of every 5,555 registered drivers in the US died in a car accident in 2008
Scuba Diving

- Equipment used: mask, snorkel, fins, buoyancy control device, regulator, and a tank. Other equipment such as dive skins will depend on temperature of water.
Scuba Certifications

Scuba education level

**Beginner**
- ISO 24801-2 (Autonomous Diver)
- PADI Open Water Diver (OWD)
- CMAS* (one-star)
- SSI Open Water Diver (OWD)
- NAUI Scuba Diver

**Advanced**
- PADI Advanced Open Water Diver (AOWD)
- SSI Advanced Open Water Diver (AOWD)
- NAUI Advanced Scuba Diver (ASD)

**Rescue diver**
- PADI Rescue Diver (RD)
- CMAS** (two-star)
- SSI Diver Stress & Rescue
- NAUI Scuba Rescue Diver

**Dive Guide**
- ISO 24801-3 (Dive Leader)
- PADI Divemaster (DM)
- CMAS*** (three-star)
- SSI Dive Guide (DG)
- NAUI Divemaster (DM)

**Dive Instructor**
- ISO 24802-1/2 (Scuba Instructor)
- PADI Open Water Instructor (OWI)
- CMAS* Instructor (one-star)
- SSI Open Water Instructor (OWI)
- NAUI Instructor

- The dive student learns to manage himself and his dive equipment under water.
- The focus of the dive student is directed to his environment. (The sea or the lake)
- The dive student learns to take responsibly for his buddy and how to rescue him.
- The dive student learns to lead groups and plan dives in detail.
- The instructor candidate learns to teach, test and certificate other divers.
Dangers of Scuba Diving

- Flying – waiting at least 12 hours after flying or diving
- Hypothermia
- Trauma
- Barotrauma, including arterial air embolism, ear, pulmonary, sinuses
- Decompression sickness
- Oxygen toxicity
- Nitrogen narcosis
  - Light-headedness, inattention, poor concentration, poor judgment, anxiety, decreased coordination, hallucinations and coma
  - Treatment is to ascend from the depth
4 Main Reasons Scuba Divers Die

1. Poor Diver Health- obesity, CAD, HTN, breathing difficulties (asthma/COPD/allergies), lack of fitness, pre-existing injuries and dehydration. Stress/anxiety can lead to poor decision making and panic

2. Procedural Errors- buoyancy control problems, rapid ascents, missed decompression stops, general skill limitations, ear equalization problems, failing to monitor air supply. 26% of all Scuba fatalities caused by emergency ascent often precluded by other procedural errors.

3. Environmental issues- open water environments can change rapidly, good buoyancy control and the ability to swim efficiently are crucial

4. Equipment Problems- BC issues involved in 7.5% of the fatalities, regulator in 6%, weight systems in 5%, and mask/fins/dry suit and computer failures were involved in <3%. Ultimately the divers reaction to equipment failure is more likely to impact the outcome of the incident
Scuba Diving - What to look for?

- Frequency of dives, time since last dive
- Certifications, amateur vs professional
- Average and max depth
- Purpose of diving - pleasure, search/rescue, cave diving, retrievals
- Health conditions
- Alcohol/drug criticism
Case Study 1

- 35/F, smoker, 5.10.240#
- Advanced open water certification
- Has not dove in 10 years
- Took refresher course through PADI last month
- Plans 2 dives on vacation to Caribbean with spouse up to 50ft
- Mild asthma - Tx albuterol
Case Study 2

- 23/M, smoker, 6.1.205#
- GGT 2.8x nml, AST 1.5x nml, HDL 90
- Admits 6-8 beers on weekend nights, Marijuana use 2-3x/wk
- Anxiety Tx Xanax as needed
- Traveling to Hawaii for a week with friends and plans on scuba diving
- Advanced open water certification
- Only dives in past were for certification
Case Study 3

- 58/M, 6.0.290#
- MI 3 years ago with stents to LAD, RCA and 1st diagonal. Stable since surgery with no symptoms.
- Severe sleep apnea with diagnostic sleep study AHI 58, wears CPAP
- Advanced open water certification for 30 years
- Approximately 50 dives total, avg depth 75 ft and max depth 120 ft
- Plans on diving during trip to Barbados
References

- Federal Aviation Administration [www.faa.gov](http://www.faa.gov)
- National Transportation Safety Board [www.ntsb.gov](http://www.ntsb.gov)
- Sports Car Club of America [www.scca.com](http://www.scca.com)
- Divers Alert Network [www.diversalertnetwork.org](http://www.diversalertnetwork.org)
Questions?