Rationale for Project

- To gain a better understanding of the development pathways in ski racing, with a goal to provide insight toward development and improvement in the future of USA ski racing

- To identify the motives, processes, people, cultures that drive elite performance from junior levels to World Cup competition

- To produce a body of knowledge of best-practices and overarching themes to enable informed decision-making and alignment among:
  - Organizations
  - Coaches
  - Officials
  - Parents
  - Athletes

- To understand the European development system
Phase I: Statistical Analysis

- Looked at World Cup Top 30 Men and Women – All events
  - Data as of end of 2015 season

- Compared tech vs. speed events. Looked for differences in trends.

- Compared men vs. women. Looked for differences in trends.

- Looked at today's top junior athletes, American and worldwide
  - Plotted today's juniors against World Cup Top 30 25th percentile
Interviewed Thought Leaders

- Experts as recommended by USSA leadership. Conducted hour long interviews with current and former head coaches and sports science leaders from:
  - USA
  - Canada
  - Austria
  - Germany
  - Norway
  - Croatia
  - Italy
  - Switzerland
  - France
  - Russia

- Asked same questions of all
- Looked for commonalities
Phase III: World Cup Athlete Online Survey

- An independent online survey was conducted among World Cup athletes
- Isolated WC Top 15 and American athletes to look at differences from overall group
- 37 questions focused on factors of development from early to elite stages
- 127 respondents
- 25 top 15 World Cup athletes, 50 top 30 World Cup athletes

Male vs. Female Respondents

- Male: 57%
- Female: 43%

Respondents' Primary Event

- SL: 23%
- DH: 22%
- GS: 28%
- SG: 27%
Overarching Findings

1) Ski racing is an inherently rewarding sport.
2) There are many roads that lead to Rome…but not all roads lead to Rome.
3) Ski racing is a skill sport.
4) Success is found at a young age.
5) Parents are the biggest influencers.
6) Skiing is cultural to Europeans.
7) Volume is critical to development.
8) Concentration, not specialization.
9) Speed skiers are also very good tech skiers.
10) USA juniors trail competitors.
Ski racing is an inherently rewarding sport.

Finding #1
What were the most important priorities in your life prior to becoming a professional?

- **Family** 27%
- **Friends** 16%
- **Fun** 19%
- **Competition** 6%
- **Skiing Lifestyle** 6%
- **Winning** 8%
- **Education** 11%
- **Celebrity Status** 4%
- **Financial Status** 3%
- **Inherently rewarding motivational factors make up 85%**

Ski racers are **NOT driven by winning, celebrity status, financial status...**

Ski racers are **DRIVEN BY family, friends, fun, lifestyle...**
What were the most motivating factors in your decision to pursue excellence in ski racing?

The reasons they choose to begin are the same reasons they choose to be great.
What do you consider the most important long-term factors contributing to your success?

- Dedication & commitment: 23%
- Family support: 21%
- Coaching: 16%
- Training environment: 15%
- Education about training: 10%
- Competitive success: 10%
- Competitive failure: 4%
- Financial incentive: 1%

60% attribute their success to attitude and those who are there to support it...
There are many roads to Rome…but not all roads lead to Rome.

Finding #2
There are many roads that lead to Rome…

- In ski racing, not all paths to excellence are the same

- Range of development paths among top 30 supports the individual and dynamic nature of the journey

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Early developers ↔ Late bloomers

Buck Hill ↔ Squaw Valley

Gate training ↔ Free-skiing

Parental involvement ↔ No parental involvement

Buck Hill ↔ Ski Academy

Independent program ↔ Free-skiing
…but not all roads lead to Rome.

- Studying current World Cup Top 30 as juniors shows the paths athletes took to reach World Cup
  - There are important universal commonalities

- Establishing 25th percentile benchmark includes the top 75% of the field
  - 22 of 30 athletes progressed within range

- Progression that still yields a high probability of world cup success
World Cup Top 30 Men’s Slalom – World Ranks as Juniors

Outliers
- Khoroshilov didn’t have a WC start until 20 and first podium at 30
- Chodounsky first WC start at 25
World Cup Top 30 Women’s Slalom – World Ranks as Juniors

Outliers
- Curtoni first WC start at 22, no podium until 27
World Cup Top 30 Men’s Giant Slalom – World Ranks as Juniors

Outliers

- Fanara didn’t have a WC start until 24, podium until 29
World Cup Top 30 Women’s GS – World Ranks as Juniors

Outliers
- Curtoni first WC start 22, no podium until 27
Ski racing is a skill sport.

Finding #3
Ski racing is a skill sport.

Based on thought leader consensus:

- Requires massive volume to reach the top (adaptability, balance, agility, come from volume)
- Nurture not nature
- Unlikely to reach the top if pursued recreationally
- Requires an environment of challenge
- Variety is critical (gates, drills, free-ski, terrain, surface, etc.)
- Purposeful skiing is most beneficial
- Good coaching at young ages is critical
At what age did you first ski?

77% of athletes were skiing by age 3!
Would you consider yourself a natural athlete?

![Bar chart showing the distribution of responses]

- **Natural Athlete**: 51%
- **Somewhat Natural**: 22%
- **Equal Combination of Both**: 20%
- **Somewhat Unnatural**: 5%
- **Very Unnatural**: 1%

*Only 51% of top athletes considered themselves natural.*

*Skiers are not born, they are BUILT!*
Success is found at a young age.

Finding #7
Age at each development milestone…

**First started skiing**

- 80% skiing by 3...

**First started ski racing**

- 88% ski racing by 8…
Age at each development milestone...

First regional success

80% first regional success by 12...

84% made junior team by 16...

76% national success by 16...

Made junior team

First national success
There are some outliers, but women tend to reach high-performance earlier than men.

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<th>1&lt;sup&gt;st&lt;/sup&gt; WC start</th>
<th>1&lt;sup&gt;st&lt;/sup&gt; Points</th>
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<td><strong>Men</strong></td>
<td>20</td>
<td>21</td>
<td>24 (GS23)</td>
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</table>
Parents are the biggest influencers.

Finding #9
Was your family “fans” of the sport?

- Extremely: 46%
- Somewhat: 43%
- No: 11%

89% of athletes’ families were fans of ski racing.
How involved were your parents when you decided to concentrate on skiing as your primary sport?

85% of parents were involved when athletes decided to pursue the next level...
Who were the most influential people on your early ski racing career?

- Parents: 27%
- Coaches: 22%
- Brothers & Sisters: 19%
- Peer athletes: 14%
- Friends: 12%
- Others: 6%

46% are family members.

Coaches and peers make up 36%.
Skiing is cultural to Europeans.

Finding #5
Skiing is cultural to Europeans

- Families, communities, even entire nations revolve around ski racing
- “20 Buck Hill’s in Oslo”
- Hundreds of small hills in Alps
- “If I didn’t ski I wouldn’t have had any friends.”
- Kids ski every day

Lots of volume young!
Volume is critical to development.

Finding #8
Growing up, how long was your drive to the mountains?

79% lived within one hour of the mountains.
At what age did you begin attending summer training camps?

75% of athletes were attending summer camps by age 10.
What does volume look like?

Total On-snow Days per Year: Winter and Offseason

- **U8**: 50 Winter, 0 Offseason
- **U10**: 80 Winter, 10 Offseason
- **U12**: 100 Winter, 13 Offseason
- **U14**: 100 Winter, 20 Offseason
- **U16**: 100 Winter, 30 Offseason
- **U18**: 100 Winter, 50 Offseason
- **U21+**: 100 Winter, 70 Offseason

Legend: Winter in blue, Offseason in orange.
Concentration, not specialization.

Finding #4
Wrong Question!

Clearly high volume of ski specific training is required. More than recreational.

Answer is to Concentrate

- Ski when there is snow on the ground
- Do not let other sports interfere with skiing
Did your family encourage participation in other sports?

83% said their families encouraged multiple sports.
Number of sports regularly practiced at younger ages…

**Age 0-12**

- 9% played 1 sport
- 17% played 2 sports
- 29% played 3 sports
- 12% played 4 sports
- 11% played 5 sports
- 23% played 6+ sports

**Age 13-15**

- 14% played 1 sport
- 21% played 2 sports
- 24% played 3 sports
- 22% played 4 sports
- 3% played 5 sports
- 16% played 6+ sports

75% played 3 or more sports at 0-12

70% played between 2-4 sports at 13-15
At what age did ski racing become your primary activity?

By age 16, 83% of athletes identified themselves as ski racers above all else...
Speed skiers are good tech skiers too.

Finding #6
Speed skiers are good tech skiers too.

- Ski racing is becoming more technical
- SL/GS skills are paramount
- Introduction to speed elements early is good
- Mastering fundamentals early is critical for any event
World Cup Top 30 Super G Men 25\textsuperscript{th} Percentile World Rank with 25\textsuperscript{th} Percentile Best Tech Rank as Juniors

75\% of today’s top SG skiers were sub-20 point tech skiers as juniors!

*75\% of current Top 30 WC SG Men had a SL or GS world rank below this level as juniors

*2015 points are included for illustrative purposes but are not a consistent measurement over time
75% of today’s top DH skiers were sub-30 point tech skiers as juniors!

*75% of current Top 30 WC DH Men had a SL or GS world rank below this level as juniors

*2015 points are included for illustrative purposes but are not a consistent measurement over time
World Cup Top 30 Downhill Women 25<sup>th</sup> Percentile World Rank with 25<sup>th</sup> Percentile Best Tech Rank as Juniors

*75% of current Top 30 WC DH Women had a SL or GS world rank below this level as juniors*

75% of today’s top DH and SG skiers were sub-20 point tech skiers as juniors!
USA juniors today trail our competitors.

Finding #10
Men SL
Current 16-22 Year-olds Who Meet World Cup 25th Percentile Criteria

- USA 8th out of major countries
- 45 athletes (age 16-22) worldwide meet 25th Percentile

USA:
2. AJ Ginnis (1994)

*based on end of 2015 season
**Women SL**
**Current 16-22 Year-olds Who Meet World Cup 25\textsuperscript{th} Percentile Criteria**

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<th>Country</th>
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</table>

- USA 6\textsuperscript{th} out of major countries
- 29 athletes (age 16-22) worldwide meet 25\textsuperscript{th} Percentile

**USA:**
2. Paula Moltzan (1994)

*based on end of 2015 season*
Men GS
Current 16-22 Year-olds Who Meet World Cup 25\textsuperscript{th} Percentile Criteria

- USA 7\textsuperscript{th} out of major countries
- 56 athletes (age 16-22) worldwide meet 25\textsuperscript{th} Percentile

**USA:**
2. Ryan Cochran-Siegle (1992)

*based on end of 2015 season*
Women GS
Current 16-22 Year-olds Who Meet World Cup 25th Percentile Criteria

- USA 8th out of major countries
- 40 athletes (age 16-22) worldwide meet 25th Percentile

From USA:

*based on end of 2015 season
USA is at a disadvantage to other ski racing nations

- Financial sacrifice is high barrier to entry/continuation
- USA is short on volume at young ages
- Skiing culture not as prevalent

What can we do to improve?
Financial Sacrifice is High Barrier to Entry/Continuation

- **Bad news/good news…**
  - Self funding model allows for late bloomers
    - Can NCAA be a pipeline for USA?
  - Need for awareness and education
    - Is so much racing and travel really necessary?

- **Programs to lower cost**
  - Local spring/fall camps for off-season
  - Investment in state of the art snowmaking
  - Cultivation of alternative training sites

- **Prioritization of NorAm’s**
  - Critical USST supports high quality, low point series.
  - Create high quality racing opportunities close to home
USA behind on volume at young ages

- Improve access
  - night skiing
  - state-of-the-art snowmaking
  - quick turnaround
  - school collaboration
  - proximity to mountains

- Structure programs around best practices:
  - Focus on mastery of fundamental techniques. Disciplined practice matters most.
  - Create skiing and racing opportunities as early in life as possible.
  - Educate about international best practices pathway.
  - High quality programs and coaching at all age groups.
  - Create inclusive, yet high-performance training environments.
  - Encourage other sports, but concentrate on skiing.
  - Structure younger development teams to focus on tech over speed.
Skiing culture not as prevalent in USA

- Create **micro-cultures.** Community by community.
  - Educate and engage parents
  - Importance of best practices
  - Engage media
  - Celebrate hero’s
  - Engage school systems
  - Access and quality of training environments
  - Cultivate donors
Overarching Conclusion: Ski racing is a no-lose sport.

- Pursuing ski racing at ANY level of commitment is positive.

- Inherently rewarding in and of itself

- No apologies or sacrifices needed…fun activity

- Generations of ski racing shows lifelong positive values

- Promotes personal development, maturity, confidence, accomplishment and physical well-being
Thank you for your time and to the athletes for their participation.

Kris Ochs
kris@leeverpartners.com
303-214-8208

Dan Leever
dan@leeverpartners.com
561-331-1890