

Alberta Sport and Recreation Injury Survey

Final Report

A project by

Sport Medicine Council of Alberta (SMCA)
Alberta Centre for Well-Being (ACFWB)

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Alberta Health
Alberta Community Development

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Please Keep In Mind

When reviewing the “Alberta Sport and Recreation Injury Survey” please keep in mind:

- Care should be taken when making conclusions specific to individual sports. In some instances the sample size is not sufficient to make conclusions that are representative of the injury situation within specific sports.
- The sample chosen is of Albertans, and is *not* necessarily indicative of all Canadians.
- This survey does not differentiate between competitive and recreational activity, and as such many injuries may have occurred while playing in an unsupervised activity, without sufficient protective equipment, or in an otherwise uncontrolled setting.
- The survey encompasses anyone who has seen a health professional as a result of a sport injury. Injuries ranged from contusions and cuts to broken bones and concussions.
- The information found within this survey does not necessarily reflect the beliefs of the authors, or financial supporters, but is intended to be an indication of the sport injury situation in Alberta. Results will be used as a catalyst for programs and educational resources.

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EXECUTIVE SUMMARY

The 1996 Alberta Sport and Recreation Injury Survey is a retrospective study describing the annual prevalence of injuries resulting from sport and recreational involvement in the province of Alberta. Data was collected by means of a telephone survey using random digit dialling techniques to obtain a representative sample of Albertans in the winter of 1995-96. The sample produced a total of 3790 respondents from 1478 households in the province evenly split between gender with an age range of 6 to 93 years.

The survey asked respondents information regarding medically attended, non-fatal injuries resulting from sports and recreational activities. Injuries were defined as those occurring during participation in a sport or recreational activity following the International Classification of Diseases (ICD9) E-codes: (i.e., struck in sports, fall in sports, bicycle-related injury, riding an animal, water sports, overexertion, fall from playground equipment or other vehicles, primarily skates and skateboards), which required attention from medical personnel.

Results indicate that 83% of Albertans reported participating in at least one sport or recreational activity in the 12-month period prior to the study. Males (84.4%) reported slightly higher participation rates than females (81.8%).

Findings showed that 8.5% of the total population, aged 6 years and over, reported having to visit a health professional as a result of a sport or recreational activity injury. This number equates to an injury rate of 10.2% for "active" sport or recreational participants in Alberta. Based upon these injury rates, it is estimated that 194,310 sport or recreational injuries were experienced in the previous 12 months (95% Confidence Intervals 173,964-215,166).

Among those reporting a sport or recreational injury the most common types of injuries were sprain/torn ligament (31.2%), strain/pulled muscle (18.8%), and fracture (13.4%). The most common bodily locations of injuries were the knee (23.3%) and ankle (13.4%). In addition, of those Albertans reporting injuries, 5.1% reported having to stay at least one night in a hospital as a result of their injury and 27% of those injured reported missing at least one day or more of work or school as a result of their injury.

The sports or activities which produced the most injuries were: ice hockey, baseball, basketball, soccer, jogging/running, recreational cycling, tackle football, alpine skiing and softball. The sport or recreational activities with the highest injury rates in the present study were: boxing (100%), rodeo (63%), rugby (47%), team handball (40%), competitive cycling (27%). Care should be taken in examining these results as various sub-samples of the population were not sufficiently sampled to allow for generalization.

Recommendations arising from a meeting of key service providers were made and are included within the body of the final report.

I. INTRODUCTION

Injury has been described as a specific and identifying bodily impairment or damage resulting from acute exposure to an external energy source (mechanical, chemical, electrical, or thermal). The recent General Social Survey (Statistics Canada, 1987) found that sport and recreational injuries were the second most frequent type of injury in Canada. Motor vehicle injuries were the most common mishap, accounting for 33% of the reported injuries, while 23% were sport and recreational injuries, 21% were work related, 13% were injuries which took place in the home and 10% were unclassified.

A 1987 study conducted by the Régie de la sécurité dans les sports du Québec estimated the overall cost of injuries and deaths resulting from recreation and sport activities in Quebec to be \$184 million. The estimate was established from 239,000 participants who consulted health professionals to attend to their injuries. The study concluded that sport and recreational injuries accounted for 21% of all injuries in the province of Quebec.

The Ontario Ministry of Tourism and Recreation conducted a similar study with assistance from the Canadian Sports Spine and Head Injuries Research Centre. Key findings of this study include:

- 1.3 million participation-related injuries in 1986 in Ontario.
- Economic costs for recreation and sport injuries exceeded \$663 million in one year.
- 530 catastrophic incidents, including 87 deaths and 48 cases of paralysis in 1986.
- One-half of all serious school-related injuries are the result of athletic activities.
- 25% of all emergency ward cases are related to sport and recreation.

More recently, sport and recreation injury surveys using random-digit sampling procedures in Quebec (Impact Recherche, 1993) and Ontario (McLaren, 1996) have found sport injury rates of 4.8% and 7.4% respectively.

Injury severity, as defined by associated treatment, may be described in terms of a pyramid. At the apex of this pyramid, the smallest portion of the injury picture, is death. Following in a descending manner are: hospitalizations, emergency room visits, medical clinic visits, and on-site medical care. Until recently the only sport or recreation-specific injury information readily accessible in the province has been fatality statistics available through the Alberta Medical Examiners office. At the level of hospitalizations and emergency room visits, injuries are coded using the international ICD9 coding system. Unfortunately this coding system lacks specific codes for the majority of sport and recreational activities. Although there has been recent implementation of a sport and recreation activity ICD9 subdirectory for severe trauma in six regional hospitals in Alberta, the vast majority of sport and recreational injury data remain unrecorded and inaccessible. The purpose of this survey is to obtain data on sport and recreational injuries, currently non-existent in Alberta.

II. METHODOLOGY

This study was a close replication of recent studies completed in Quebec (Impact Recherche, 1993) and Ontario (McLaren, 1996). Participation patterns of Alberta residents aged six years and older and the pattern of sport and recreational injuries requiring medical treatment were studied using a random sample of Alberta residents. The details of the study methodology are presented below.

Sample Design

A telephone survey of a random sample of Alberta households was conducted to collect the desired information. In each randomly selected household that agreed to participate in the survey, an individual was interviewed about all household members age 6 years and over.

Selection of Households

The sampling frame of households included any dwelling unit in Alberta which could be reached by direct dialling at the time of the survey. Households were randomly selected using random digit dialling (RDD) methodologies. Use of RDD gives all households, not just those listed in the telephone directories, an equal possibility of selection. A computer generated a random sample of numbers using the Alberta prefix (403), the three digit central code (XXX) and the four digit household code (XXXX). Each selected phone number was called a total of 5 times before replacement. No more than 2 calls to the same number were made during any one data collection shift. Subsequent calls were placed at differing times of the day with no less than two hours apart. One call to each number was also placed during a daytime shift before the phone number was considered exhausted.

In the Quebec study (Impact Recherche, 1993) information from 3,518 households produced information on 8,365 individuals and 400 injuries. In the Ontario study (McLaren, 1996) a total of 3,367 households provided information from 8,367 individuals of whom a total of 604 people sustained an injury that required treatment by a health professional. For the present study, a total of 4,529 telephone numbers were contacted yielding a total of 2,948 eligible households. Of this number, 1,478 households provided information giving a response rate of 50.2% from eligible households (see Table 1).

Selection of Respondents

The interviewer identified an adult within the household as the respondent. Each respondent was asked to provide demographic, and sport and recreation participation and injury information regarding all members of the household age six years and older. No screening was done for those individuals or households who had sustained injuries. This provides an unbiased estimate of the injury rate when compared to information gathered by completing interviews only in households where an injury had occurred.

Data Collection Procedures

Data collection was done by means of computer assisted telephone interviewing (CATI). All telephone interviewing was conducted by Criterion Research (Edmonton). Questionnaires were programmed onto a computer and displayed, with a listing of eligible responses, to a trained interviewer by means of computer display screen. The program automatically presented the next question and included the related skip patterns found within the questionnaire. This reduced the error associated with improper responses and skip errors which may be associated with written questionnaires.

Data was gathered by means of telephone interview with the identified household member eighteen years of age or older. This individual provided demographic, and sport and recreation participation and injury information for each household member more than six years of age or older. Only information regarding injuries for which medical attention was sought was gathered. If the respondent, or any subsequent household member had not participated in any sport or recreational activities in the 12-month period preceding the survey only demographic information was gathered (age, sex, income level, educational level). For all respondents and family members who indicated participation in sport and/or recreational activities, information about the type and frequency of participation was collected. For individuals who had been injured, additional information regarding the nature, severity and consequences of the injury was collected.

Response Rates

For the purpose of this survey, response rates were calculated as the percentage of eligible households which agreed to provide information to the interviewer at time of call. Non eligible households included non-residential numbers; numbers not in service/disconnected; households where a person of eighteen years of age or older was not present; and households where the respondent was unable to speak English, or was not healthy enough to complete the interview. For response rate calculations, numbers where there was no answer after 5 attempts were classified as a non-response.

A total of 4,529 telephone numbers were contacted, of which 2,940 (65%) were deemed eligible

households. Of this number a total of 1,478 households provided information (50.2%) and 1,462 households refused to participate in the study (49.8%). The full distribution of the telephone sample is presented in Table 1.

Standard Error

The standard error of the estimate at the 95 percent confidence level for the present survey is $\pm 1.56\%$ at the level of households, and $\pm 0.98\%$ at the level of individual. These levels of confidence are for the province as a whole. Any subsequent breakdown by age, gender, income or educational levels will result in an increase in the error of the estimate. Caution must also be taken in generalizing from sport or activity-based injuries as the sample is considered to be representative of the population of Alberta, but not necessarily of each activity cited.

Questionnaire

The questionnaire was structured to allow for comparison to recent Quebec and Ontario surveys (Impache Recherche, 1993; McLaren, 1996). Participants were informed that the questionnaire pertained to a study of sports and recreational related injuries for the Sports Medicine Council of Alberta. The questions related to sport and recreational activities participated in at least ONCE in the 12-month period prior to the survey. It does NOT include activities such as housework, gardening, mowing the lawn, picnics, or walking to do errands. With respect to participation, respondents were guided by the use of the following qualifiers: bike riding, swimming, home exercises, team sports etc. Of principal interest were injuries resulting from sport or recreational activities which resulted in a visit to a health professional. Where required, participants were prompted that these professionals included: doctors, physiotherapists, chiropractors or sports clinic personnel.

The questionnaire collected information with respect to frequency and type of sport and recreational activity involvement; numbers, types and location of injuries requiring medical attention; the nature of the most serious injury; the location and type of medical attention received; and an estimate of the amount of time lost to work, school and regular activities as a result of the injury in question.

A copy of the questionnaire used for the Alberta Sport and Recreation Injury Survey appears in Appendix III. The questionnaire was repeated for each injury which required medical attention and for every subsequent household member six years of age and older.

III. RESULTS

Subject Characteristics

Characteristics of the sample

A total of 1,478 Alberta households participated in this survey of sport and recreation injuries (see Table 1). Within these households, information was obtained for 3,790 individuals aged 6 years and older (see Table 2).

Characteristics of the households

Demographics of the participating households are presented in Table 3. The majority of households (76%) contained 3 or less members; 23.7% reported 4 to 6 members; and less than 1% had more than 6 members.

Participation by household income was representative of the Alberta population with 31% of the sample falling within the \$30,000 - \$60,000 range. However, some caution should be used when considering the income data because almost 25% of the sample declined to report their household income.

Characteristics of the individuals in sample

As stated previously, information was obtained on 3,790 individuals aged 6 years and older (see Table 2). The sample was almost evenly split by gender with slightly more males (50.7%) than females (49.3%) participating. The largest proportion of the sample was between 25 and 44 years of age (39.6%); 26% were less than 25 years of age; 20.5% were between 45 and 64 years of age and about 6% were 65 years in age or older. Level of education (for those over 18 years of age) varied with 12.6% of the sample reporting less than a high school education and approximately 30% having attended or completed university.

Participation in Sports and Recreational Activities

Rates of participation in sport and recreational activity

A total of 3,151 individuals (83% of sample) reported that they participated in at least one activity at least once in the past 12 months. Males (84.4%) were found to have a slightly higher rate of participation than females (81.8%).

The youngest age group (6-14 years of age) reported being the most active with participation

rates decreasing steadily with age (Table 4). While younger males tended to be more active than younger females, by middle-age (45-64 years of age) this trend appeared to be reversed with females being more active than males. Similar to age, participation rates were moderated by household income with the wealthiest individuals reporting much higher activity levels (90.5%) than the lowest income earners (73%).

Recreational cycling and swimming were the two most popular sports for both males and females (see Table 5). Golf, walking, baseball, alpine skiing and hiking were all rated among the top ten activities, in terms of participation rates, for both men and women. However, relative participation rates within these activities were found to differ by gender.

Sport and Recreation Injuries

Of the 3,790 participants surveyed, 322 reported experiencing an injury which required at least one visit to a health professional in the preceding 12 months as a result of a sport or recreational activity. Thus, the injury rate for the overall population was 8.5%. Within the active portion of the population the rate of injury was 10.2%. The injury rate for active males (12.2%) was higher than that for active females (8.1%).

Based upon these rates, there were an estimated 194,310 injuries sustained by Albertans aged 6 years and older in 1995 as result of sport or recreational involvement which required medical attention (Table 6). Calculations were based on the 1995 provincial population for age 6 and older of 2,286,000 as provided by Statistics Canada. The injury rate varied widely across age and gender groupings (Table 6) with males experiencing almost twice as many injuries as a result of sport and recreational activities as females. For both males and females the highest rates of injuries occurred in the 15- to 19-year-old age group, with the rate of injury declining consistently across increasing age categories. Similar to participation rates, injury rates for sport and recreation injuries tended to increase with household income. However, contrary to this trend, the highest injury rate was observed amongst males (16.3%) from the lowest income group.

Activities in which injuries occur

Participation rates, injury rates and estimated number of injuries for the top ten injury producing activities are presented in Table 7. While injuries were recorded in 60 activities, they were not evenly distributed among these activities. More than half of the total estimated injuries were attributed to 7 activities (ice hockey, baseball, basketball, soccer, jogging, cycling, and volleyball). Ice hockey (28,367) and baseball (24,591) produced approximately one fifth of all sport or recreation injuries. A detailed analysis of the ten leading activities in terms of the number of estimated injuries is presented in Appendix I. See Appendix II for a listing of all activities for which at least one injury was reported.

The activities with the highest injury rates among survey participants were boxing (100%), rodeo (63%), rugby (47%), team handball (40%) and competitive cycling (27%). However, the

relatively low participation rate among survey participants yielded relatively few estimated injuries. Although the small sample sizes of these activities raise question regarding the accuracy of any estimation to the overall population, the high rate of injury among survey participants indicates a need for further research to be conducted in the prevalence, nature and mechanism of injuries in these sporting activities.

The activities that produced the highest number of estimated injuries in Alberta (i.e., ice hockey, baseball, basketball) displayed a combination of relatively low injury rates and high participation rates. For example, recreational cycling had a very low injury rate (2%) yet resulted in more than 12,000 estimated injuries due to the number of people who participated in this activity (33% participation rate). Of the ten activities producing the highest number of estimated injuries only tackle football (25%) had an injury rate exceeding 15% for the participating population (Table 7).

Bodily location of injury

Participants were asked to identify the bodily location of their most serious injury and of up to three other injuries that they may have experienced in the preceding 12 months (see Table 8).

Half of all injuries were to the lower limbs with the knee (20.4%) and ankle (14.4%) accounting for most of these injuries. Almost 25% of injuries were to the upper limbs while the head and face received 10% of the injuries. In terms of the most serious injury, a similar pattern was observed with the knee, once again, experiencing most of the injuries (23.3%).

Nature of injury

The most common types of injuries reported were related to ligament damage (31.2%) and pulled muscles (18.8%), while fractures and dislocations accounted for another 20% of the injuries (see Table 9). It should be noted cuts and scratches did not account for a high percentage of the injuries. Although cuts and scratches may be common maladies, to be included in this survey, these injuries had to involve a visit to a health professional. Thus, only severe cases of cuts and scratches were in this data.

Consequences of Injuries

Visits to health professionals

Respondents were asked what type of health professional first treated their injury. Participants indicated that they most frequently made initial consultation with their family doctor or an emergency room physician to begin treatment (see Table 10). Forty-four percent of the injured respondents reported having visited a second health professional for their injury while a further 22% consulted a third health professional. Therapists (e.g., physical therapist) and specialists were the most consulted health professionals on both of those occasions. Overall, family doctors and therapists were the two most consulted professionals. However, therapists (9.3) and chiropractors (5.7) had the highest average number of visits over the course of treatment.

Hospitalizations

Of participants reporting injuries, 5.1% indicated having to stay at least one night in a hospital as a result of their injury. The average length of stay was 4.95 nights, while the median length of stay was 1 night. Given the few number of responses on this particular question, the median is a more accurate indication of central tendency.

Time off school/work

Approximately 27% of the respondents reporting an injury indicated that they missed at least one day of school or work as a result of their injury (see Table 11). The mean number of days incapacitated was 13 and the median was 3. More than twice as many males as females reported having to miss a day of school or work. Also, on average, males missed more than four times as many days as females.

IV. DISCUSSION

Albertans display a high degree of participation in sport or recreational activities with 83% reporting participation in at least one sport or recreational activity in the previous 12 months. The high percentage reflects the low criteria established for activity in terms of frequency. More important, approximately 45% of these active individuals participate in an activity 3 or more times per week (cf. Alberta Community Development, 1996).

Sport and Recreational Injuries in Alberta

Based upon the data collected for this survey, it is estimated that over 190,000 injuries occur each year in Alberta as a result of participation in sport and recreational activities. The prevalence rate for injuries in Alberta is 8.5% in the overall population, with 10.2% of sport and recreational activity participants experiencing injuries. It is estimated that ice hockey and baseball participants sustain the greatest number of injuries each year. More than half of all injuries occur in 7 activities (ice hockey, baseball, basketball, soccer, jogging, cycling and volleyball).

In general, the majority of injuries occur in activities that have large numbers of participants and relatively low injury rates. For example, of the top 10 injury-producing sports and recreational activities in Alberta, only tackle football (25%) has an injury rate greater than 15%. However, there should be more encouragement and enforcement of appropriate equipment usage (e.g., helmets and face guards in hockey; batting helmets in baseball; shin guards in soccer, etc.) at all levels and ages of sport participation. In particular, the fact that almost 20% of ice hockey injuries are to the head/face suggests that avoidable injuries still do occur.

Comparison to Ontario and Quebec Surveys

The study allows for comparisons with the results from sport and recreation injury surveys from Ontario (McLaren, 1996) and Quebec (Impact Recherche, 1993). As seen in Table 12, reported participation rates in sports and recreational activities are slightly higher in Alberta (83%) and Quebec (80.5%) than Ontario (75.6%). While cycling and swimming are universally popular activities, participation rates within other activities vary across the provinces. For example, the rate for walking is much higher in Quebec (44%), where it was the most popular activity, than in Ontario (28%) or Alberta (14%). On the other hand, Quebecers did not report participation as much in activities such as baseball, basketball and soccer which are more popular in Alberta and Ontario.

The finding that active Albertans experience a higher injury rate (10.2%) than active individuals in Ontario (7.4%) and Quebec (4.8%) is a potential concern. Although the studies do not provide information regarding the mechanism of injuries, the difference in injury rates may be explained by differential participation in injury-provoking activities. For example, Quebecers are not as active in some of the more injurious sports such as basketball, baseball and soccer, and thus may not be experiencing as many injuries as participants in Alberta and Ontario. Similarly, Albertans may be experiencing proportionately more injuries than Ontarians because they are more active in two of the most injury-provoking activities--ice hockey (males: 21% vs. 14%) and alpine skiing (11% vs. 5%). Given the substantial differences in injury rates between Alberta, Quebec and Ontario, and the high confidence in the estimates, there remains a need to study the nature, mechanisms and determinants of sport and recreational injuries in Alberta. Further research is needed to determine the extent to which the provincial differences may be preventable.

While there are some discrepancies in overall injury rates, it is interesting to consider some of the similarities in sport and recreation injuries between provinces. For example, ice hockey is the activity with the greatest number of injuries for each of the 3 provinces. In fact, 6 out of the top 7 injury-producing activities are the same for Alberta and Ontario. Quebec did not provide complete data regarding all injuries.

Cost of Injuries

Apart from the discomfort and possible pain associated with injuries, there is also an economic cost to consider. Such factors as medical expenses, including visits to health professionals and hospital fees, and time lost from school or work are related to the economic cost of sports and recreation injuries. Based upon visits by 239,000 individuals to health professionals in Quebec, a study by la Régie de la Sécurité dans les Sports du Québec (1987) estimated that the overall cost of injuries and deaths resulting from sports and recreation activities was 184 million dollars per year. More recently, a model has been developed that allows Ontario economists and other interested researchers to estimate the costs of sports and recreation injuries to the province (see Thomson, 1990; Thomson & Richardson, 1989). Applying this model to yearly injury estimates of 430,650 (Statistics Canada, 1987) and 750,800 (McLaren, 1996) in Ontario, results in estimated overall costs ranging from 260 million to 637 million dollars. Half of these costs are deemed to be direct medical costs.

Thus, based upon the estimated number of injuries and their related costs in Quebec and Ontario studies, it is estimated that the yearly cost of sports and recreation injuries is approximately 150 million dollars in the province of Alberta. Approximately half (75 million dollars) of which are direct medical costs to the province. When expressed in terms of participation rates in this survey, the yearly medical cost per active person is \$40.00 in the province of Alberta.

The reader should keep in mind that the above cost estimates for sport and recreation injuries in Alberta are just rough estimates based upon data and models from other provinces. We recommend that further studies be done, not only to calculate costs, but to identify the important factors in making such estimates and to monitor any changing trends in sport and recreation injuries in the province of Alberta.

V. RECOMMENDATIONS

In order to facilitate the development of recommendations regarding the results of the survey, a draft of the report was circulated to key groups involved in overall development and promotion of recreation and sport in the province of Alberta. Having read the report, representatives from the Sport Medicine Council of Alberta, the Alberta Centre for Well-Being, Alberta Health and Alberta Community Development met to discuss the direction of the final report. Included below are the recommendations which arose from these discussions. A summary of the overall discussion from the meeting is included in Appendix IV.

Recommendations for follow up to the Report

- That the Sport Medicine Council of Alberta (SMCA), Alberta Centre For Well Being (ACFWB), and Alberta Community Development host a collective meeting between targeted sport and recreation organizations, Regional Health Authorities, municipal planners, and other organizations to review the report and develop strategies for reducing injuries.
- That Alberta Health, Alberta Community Development and SMCA facilitate a collective approach for finding resources for intervention, monitoring, evaluation, and research.
- That mechanisms be made available for prevention, evaluation, and research related to injury prevention with the overall goal being cost-savings.
- That resources be made available to monitor injury rates. There should be a linkage with systems being currently developed or should coordinate with tracking systems by Alberta Health, e.g., ICD9 Codes
- That Regional Health Authorities be made aware of the results of this survey and encouraged to work with local organizations to take action.
- That resources be dedicated to sports that have a high volume of injury's and severity of injuries.
- That an evaluation or planning tool be developed to assist organizations in reviewing survey results and evaluating the effectiveness of the policies, leadership training, equipment, skill development programs, etc.

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Tables 1 - 12

Table 1. Distribution of the telephone sample

	Number	Percent
Total Telephone Numbers Contacted	4521	100.0
Non Eligible Households	1581	34.9
Non residential number	160	10.1
Out of service/disconnected	513	32.4
Unable to respond (e.g., language barrier)	194	12.3
Disposition unknown	714	45.2
Total non eligible households	1581	100.0
Eligible Households	2940	65.0
Households providing information	1478	50.2
Refusals	1462	49.8
Total eligible households	2940	100.0

Table 2. Demographic characteristics of individuals in the sample

Age	Number	Percent
6 - 14 years	662	17.6
15 - 19 years	339	9.0
20 - 24 years	276	7.3
25 - 34 years	690	18.4
35 - 44 years	795	21.2
45 - 54 years	495	13.2
55 - 64 years	273	7.3
65 years or older	228	6.1
Total	3758	100.0
Sex		
Female	1869	49.3
Male	1921	50.7
Total	3790	100.0
Level of Education (for those over 18 years)		
Less than high school	353	12.6
Completed high school	935	33.4
Some post secondary	252	9.0
Completed post secondary	404	14.4
Some university	251	9.0
Completed university	601	21.5
Total	2796	100.0

Table 3. Demographic characteristics of households in the sample

Household Size (members aged 6 and older)	Number	Percent
1 person	293	19.8
2 people	567	38.4
3 people	263	17.8
4 - 6 people	350	23.7
more than 6 people	5	0.3
Total	1478	100.0
Household Income		
under \$20,000	185	12.5
\$20,000 - \$29,999	177	12.0
\$30,000 - \$39,999	209	14.1
\$40,000 - \$59,999	253	17.1
\$60,000 - \$79,999	163	11.0
\$80,000 or more	138	9.3
don't know	50	3.4
refused	303	20.5
Total	1478	100.0

Table 4. Participation rates (at least once in the past 12 months) in sport and recreational activities by age, household income and gender. Percentage (%) and 95% Confidence Interval (CI).

	Overall		Males		Females	
	n	% ± CI	n	% ± CI	n	% ± CI
Total Sample	3151	83.1±1.2	1921	84.4±1.6	1869	81.8±1.7
6 - 14 years	662	95.0±1.7	346	95.7±2.1	316	94.3±2.6
15 - 19 years	339	87.6±3.5	176	89.2±4.6	163	85.9±5.3
20 - 24 years	276	87.0±4.0	142	88.0±5.3	134	85.8±5.9
25 - 34 years	690	87.7±2.5	348	87.9±3.4	342	87.4±3.5
35 - 44 years	795	82.6±2.6	393	85.5±3.5	402	79.9±3.9
45 - 54 years	495	74.9±3.8	263	74.1±5.3	232	75.9±5.5
55 - 64 years	273	71.1±5.4	142	69.0±7.6	131	73.3±7.6
65 +	228	61.8±6.3	98	67.3±9.3	130	57.7±8.5
Household Income						
under \$20,000	375	73.1±4.5	178	75.8±6.3	197	70.6±6.4
\$20,000 - \$29,999	407	78.1±4.0	205	79.5±5.5	202	76.7±5.8
\$30,000 - \$39,999	521	85.2±3.0	274	85.4±4.2	247	85.0±4.5
\$40,000 - \$59,999	726	87.2±2.4	373	88.5±3.2	353	85.8±3.6
\$60,000 - \$79,999	476	88.0±2.9	257	89.5±3.7	219	86.3±4.6
\$80,000 or more	422	90.5±2.8	213	92.0±3.6	209	89.0±4.2

Table 5. Activities with the highest participation rate. At least once in the previous 12 months. Percentage (%) and 95% Confidence Interval (CI).

Males (n=1620)	n	%±95% CI	Females (n=1529)	n	%±95% CI
Rec. Cycling	529	33.4±2.3	Rec. Cycling	514	35.0±2.4
Rec. Swimming	360	22.7±2.0	Rec. Swimming	493	33.6±2.4
Golf	339	21.4±2.0	Walking	281	18.4±2.0
Hockey - Ice	336	21.2±2.0	Aerobics	263	17.9±2.0
Baseball	285	18.0±1.9	Hiking	183	12.5±1.7
Skiing - Alpine	190	12.0±1.6	Baseball	168	11.5±1.6
Hiking	179	11.3±1.5	Golf	169	11.5±1.6
Soccer	165	10.8±1.5	Volleyball	154	10.8±1.6
Walking	137	8.5±1.4	Skiing - Alpine	140	9.5±1.5
Basketball	123	7.8±1.3	Skating - Ice	107	7.3±1.3

Table 6. Injury rates (at least once in the past 12 months) in sport and recreational activities by age, household income and gender

	Overall		Males		Females	
	n	%±95%CI	n	%±95%CI	n	%±95%CI
Total Sample	3151	10.2±1.1	1622	12.2 ±1.6	1529	8.1±1.4
6 - 14 years	662	11.0±2.4	346	13.3±3.6	316	8.4±3.1
15 - 19 years	339	21.5±4.4	176	22.3±6.1	163	20.7±6.2
20 - 24 years	276	14.2±4.1	142	18.4±6.4	134	9.6±4.9
25 - 34 years	690	11.2±2.4	348	15.0±3.7	342	7.4±2.8
35 - 44 years	795	8.2±1.9	393	9.8±2.9	402	6.5±2.4
45 - 54 years	495	7.0±2.2	263	7.7±3.2	232	6.3±3.1
55 - 64 years	273	2.6±1.9	142	2.0±2.3	131	3.1±2.9
65 years or older	228	1.4±1.5	98	0.0±0.0	130	2.7±2.7
Household Income	n	%±95%CI	n	%±95%CI	n	%±95%CI
under \$20,000	375	9.9±3.0	178	16.3±5.4	197	3.6±2.6
\$20,000 - \$29,999	407	9.7±2.8	205	13.5±4.6	202	5.8±3.2
\$30,000 - \$39,999	521	9.9±2.5	274	10.3±3.5	247	9.5±3.6
\$40,000 - \$59,999	726	12.0±2.3	373	15.5±3.6	353	8.3±2.8
\$60,000 - \$79,999	476	11.0±2.8	257	12.2±4.0	219	9.5±3.8
\$80,000 or more	422	12.8±3.1	213	13.8±4.6	209	11.8±4.3

Table 7. Estimated participation and injury rates for the 10 top injury producing sport/recreational activities (estimates based on 1995 Alberta population data).

Activity	Participation Rate	Estimated Participants	Injury Rate	Estimated Injuries
All Activities	83.0%	1,897,463	8.5%	194,310
Ice Hockey	11.5%	218,208	13.0%	28,367
Baseball	14.4%	273,235	9.0%	24,591
Basketball	7.0%	132,822	15.0%	19,923
Soccer	7.7%	146,105	12.2%	17,825
Jogging/Running	6.9%	130,925	11.0%	14,402
Cycling (Rec.)	33.1%	628,060	2.0%	12,561
Volleyball	8.3%	157,489	6.9%	10,867
Tackle Football	1.7%	322,257	25.0%	8,064
Alpine Skiing	10.5%	199,234	3.3%	6,575
Softball	4.8%	91,078	6.6%	6,011

Table 8. Body location of injuries in sport and recreational activities

	Most Serious		Other Injuries		All Injuries	
	No.	Pct.	No.	Pct.	No.	Pct.
Head/Face	32	9.9	9	10.1	41	10.0
Skull	11	3.4	4	4.5	15	3.7
Eye	4	1.2	2	2.2	6	1.5
Nose	3	0.9	1	1.1	4	1.0
Tooth/Mouth	6	1.9	1	1.1	7	1.7
Facial Bones	5	1.6	0	0.0	5	1.2
Eardrum	2	0.6	1	1.1	3	0.7
Face	1	0.3	0	0.0	1	0.2
Neck	8	2.5	2	2.2	10	2.4
Spine	27	8.4	8	9.0	35	8.5
Thorax	5	1.6	2	2.2	7	1.7
Lungs	1	0.3	0	0.0	1	0.2
Ribs	3	0.9	2	2.2	5	1.2
Upper Back	1	0.3	0	0.0	1	0.2
Abdomen and Pelvis	5	1.6	0	0.0	5	1.2
Internal organs	4	1.2	0	0.0	4	1.0
Unstated	1	0.3	0	0.0	1	0.2
Upper Limbs	78	24.2	23	25.8	101	24.6
Shoulder	20	6.2	3	3.4	23	5.6
Collarbone	3	0.9	0	0.0	3	0.7
Arm	8	2.5	2	2.2	10	2.4
Elbow	17	5.3	3	3.4	20	4.9
Forearm	2	0.6	1	1.1	3	0.7
Wrist	11	3.4	2	2.2	13	3.2
Hand/Finger	17	5.3	11	12.4	28	6.8
Unstated	0	0.0	1	1.1	1	0.2
Lower Limbs	166	51.6	42	47.2	208	50.6
Hip	2	0.6	1	1.1	3	0.7
Thigh	7	2.2	2	2.2	9	2.2
Knee	75	23.3	11	12.4	86	20.9
Leg	23	7.1	8	9.0	31	7.5
Ankle	43	13.4	16	18.0	59	14.4
Foot/Toe	16	5.0	4	4.5	20	4.9
Unstated	2	0.6	1	1.1	3	0.7

Note: While 322 individuals reported experiencing at least one injury, 89 of these individuals reported experiencing more than one injury. Therefore, the total number of injuries is 411 with the location of 4 injuries unidentified.

Table 9. Types of injuries sustained in sport and recreational activities

Type of Injury	Number	Percent
Sprain/Torn ligament	128	31.2
Strain/Pulled muscle	77	18.8
Fracture	55	13.4
Dislocation	28	6.8
Bruise/Contusion	22	5.4
Cut/Laceration	21	5.1
Tendinitis	19	4.6
Concussion	11	2.7
Scratch/Abrasion	5	1.2
Dehydration	1	0.2
Other	42	10.2

Note: While 322 individuals reported experiencing at least one injury, 89 of these individuals reported experiencing more than one injury. Therefore, the total number of injuries is 411 with the nature of 2 injuries unidentified.

Table 10. Order of consultation and number of visits with health professionals

Type of Professional	Order of Consultation				Number of Visits	
	First	Second	Third	Total	Total	Avg.
Family Doctor	231	32	5	268	448	1.7
Therapist	23	63	17	103	954	9.3
Emerg Room Doctor	80	15	3	98	134	1.4
Specialist	15	41	10	66	245	3.7
Chiropractor	23	12	0	35	201	5.7
Nurse	16	6	2	24	126	5.3
Massage Therapist	8	0	1	9	13	1.4
Other	4	9	1	14	20	1.4
Total	400	178	39	617	2092	3.4

Table 11. Average number of days off work/school due to injuries in sport and recreational activities

	N	Total Days Missed	Avg. Days Missed
Sex			
Female	34	123	3.6
Male	71	1241	17.5
Total	105	1364	13.0

Table 12. Comparison of Provincial Injury Rates: Quebec, Ontario, Alberta.

Province	n	Injury Rate	95% Confidence Intervals
Quebec ¹	8365	4.8%	4.3% - 5.3%
Ontario ²	8367	7.4%	6.8% - 8.0%
Alberta	3790	10.2%	9.1% - 11.3%

1. Source: Impact Recherche. (1993).

2. Source: McLaren. (1996).

Appendix I

Detailed analysis of 10 leading sport and recreation injury activities

Ice Hockey

Estimate of Participants	Injury Rate	Estimate of Injuries
218,208	13%	28,367

# of Participants	Participation Rate	# of Injuries
361	11.5%	47

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	19.1	Sprain/Torn Ligament	14.9
Neck	6.4	Strained Muscle	17.0
Thorax	6.4	Fracture	14.9
Spine	12.8	Dislocation	8.5
Abdomen/Pelvis	0.0	Bruise	10.6
Upper Limbs	25.5	Scratch/Cut/Laceration	10.6
Lower Limbs	29.8	Concussion	4.3
		Other Injury	19.1

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	3.4
Pct. Hospitalized	4%
Avg. Number of Days Missed from Work/School	2.6

Baseball

Estimate of Participants	Injury Rate	Estimate of Injuries
273,235	9%	24,591

# of Participants	Participation Rate	# of Injuries
454	14.4%	39

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	15.4	Sprain/Torn Ligament	38.5
Neck	0.0	Strained Muscle	10.3
Thorax	0.0	Fracture	12.8
Spine	2.6	Dislocation	2.6
Abdomen/Pelvis	0.0	Bruise	17.9
Upper Limbs	23.1	Scratch/Cut/Laceration	5.2
Lower Limbs	59.0	Concussion	2.6
		Tendinitis	5.1
		Other Injury	5.1

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	3.0
Pct. Hospitalized	0%
Avg. Number of Days Missed from Work/School	8.3

Basketball

Estimate of Participants	Injury Rate	Estimate of Injuries
132,822	15%	19,923

# of Participants	Participation Rate	# of Injuries
220	7.0%	33

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	6.1	Sprain/Torn Ligament	48.5
Neck	0.0	Strained Muscle	21.2
Thorax	6.1	Fracture	15.2
Spine	9.1	Dislocation	0.0
Abdomen/Pelvis	0.0	Bruise	3.0
Upper Limbs	12.1	Scratch/Cut/Laceration	3.0
Lower Limbs	66.7	Concussion	3.0
		Other Injury	6.1

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	6.6
Pct. Hospitalized	6%
Avg. Number of Days Missed from Work/School	21.6

Soccer

Estimate of Participants	Injury Rate	Estimate of Injuries
146,105	12.2%	17,825

# of Participants	Participation Rate	# of Injuries
244	7.7%	31

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	6.5	Sprain/Torn Ligament	48.4
Neck	0.0	Strained Muscle	25.8
Thorax	0.0	Fracture	0.0
Spine	0.0	Dislocation	0.0
Abdomen/Pelvis	0.0	Bruise	0.0
Upper Limbs	9.7	Scratch/Cut/Laceration	3.2
Lower Limbs	83.9	Concussion	3.2
		Tendinitis	16.1
		Other Injury	3.2

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	4.7
Pct. Hospitalized	0%
Avg. Number of Days Missed from Work/School	5.4

Jogging/Running

Estimate of Participants	Injury Rate	Estimate of Injuries
130,925	11%	14,402

# of Participants	Participation Rate	# of Injuries
218	6.9%	22

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	0.0	Sprain/Torn Ligament	18.2
Neck	0.0	Strained Muscle	45.2
Thorax	0.0	Fracture	0.0
Spine	13.6	Dislocation	4.5
Abdomen/Pelvis	4.5	Bruise	9.1
Upper Limbs	4.5	Scratch/Cut/Laceration	0.0
Lower Limbs	77.3	Concussion	0.0
		Tendinitis	4.5
		Other Injury	18.1

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	3.0
Pct. Hospitalized	0%
Avg. Number of Days Missed from Work/School	7.9

Recreational Cycling

Estimate of Participants	Injury Rate	Estimate of Injuries
628,060	2%	12,561

# of Participants	Participation Rate	# of Injuries
1043	33.1%	21

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	14.3	Sprain/Torn Ligament	15.0
Neck	4.8	Strained Muscle	20.0
Thorax	0.0	Fracture	25.0
Spine	0.0	Dislocation	5.0
Abdomen/Pelvis	0.0	Bruise	0.0
Upper Limbs	38.1	Scratch/Cut/Laceration	25.0
Lower Limbs	42.9	Concussion	0.0
		Other Injury	10.0

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	1.5
Pct. Hospitalized	14%
Avg. Number of Days Missed from Work/School	3.7

Volleyball

Estimate of Participants	Injury Rate	Estimate of Injuries
157,489	6.9%	10,867

# of Participants	Participation Rate	# of Injuries
262	8.3%	18

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	0.0	Sprain/Torn Ligament	55.6
Neck	0.0	Strained Muscle	16.7
Thorax	0.0	Fracture	0.0
Spine	11.1	Dislocation	11.1
Abdomen/Pelvis	0.0	Bruise	0.0
Upper Limbs	33.3	Scratch/Cut/Laceration	0.0
Lower Limbs	55.6	Concussion	0.0
		Tendinitis	5.6
		Other Injury	11.1

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	2.0
Pct. Hospitalized	0%
Avg. Number of Days Missed from Work/School	2.9

Tackle Football

Estimate of Participants	Injury Rate	Estimate of Injuries
32,257	25%	8,064

# of Participants	Participation Rate	# of Injuries
52	1.7%	13

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	7.7	Sprain/Torn Ligament	53.8
Neck	0.0	Strained Muscle	15.4
Thorax	0.0	Fracture	0.0
Spine	15.4	Dislocation	15.4
Abdomen/Pelvis	7.7	Bruise	0.0
Upper Limbs	23.1	Scratch/Cut/Laceration	0.0
Lower Limbs	38.5	Concussion	7.7
		Other Injury	7.7

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	3.5
Pct. Hospitalized	8%
Avg. Number of Days Missed from Work/School	4.1

Alpine Skiing

Estimate of Participants	Injury Rate	Estimate of Injuries
199,234	3.3%	6,575

# of Participants	Participation Rate	# of Injuries
330	10.5%	11

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	9.1	Sprain/Torn Ligament	36.4
Neck	0.0	Strained Muscle	36.4
Thorax	0.0	Fracture	9.1
Spine	0.0	Dislocation	9.1
Abdomen/Pelvis	0.0	Bruise	0.0
Upper Limbs	27.3	Scratch/Cut/Laceration	0.0
Lower Limbs	63.6	Concussion	9.1
		Other Injury	0.0

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	9.4
Pct. Hospitalized	9%
Avg. Number of Days Missed from Work/School	18.2

Softball

Estimate of Participants	Injury Rate	Estimate of Injuries
91,078	6.6%	6,011

# of Participants	Participation Rate	# of Injuries
151	4.8%	10

Location of Injury	Pct.	Type of Injury	Pct.
Head/Face	10.0	Sprain/Torn Ligament	30.0
Neck	0.0	Strained Muscle	10.0
Thorax	0.0	Fracture	20.0
Spine	10.0	Dislocation	30.0
Abdomen/Pelvis	10.0	Bruise	0.0
Upper Limbs	10.0	Scratch/Cut/Laceration	0.0
Lower Limbs	60.0	Concussion	0.0
		Other Injury	10.0

Consequences of Injuries	
Avg. Number of Visits to Health Professionals	6.7
Pct. Hospitalized	10%
Avg. Number of Days Missed from Work/School	16.3

Appendix II

Participation and injury data for all activities recording a minimum of one injury

Participation and Injury Rates for all activities recording at least one injury

Activity	# Participants	Participation Rate	# Injuries	Injury Rate
hockey - ice	361	11.5%	47	13.0%
baseball	454	14.4%	39	8.6%
basketball	220	7.0%	33	15.0%
soccer	244	7.7%	31	12.7%
jogging/running	218	6.9%	22	10.1%
cycling - rec.	1043	33.1%	21	2.0%
volleyball	262	8.3%	18	6.9%
football - tackle	52	1.7%	13	25.0%
skiing - alpine	330	10.5%	11	3.3%
equestrian	103	3.3%	10	9.7%
softball	151	4.8%	10	6.6%
weightlifting	172	5.5%	9	5.2%
martial arts	50	1.6%	8	16.0%
rugby	15	0.5%	7	46.7%
football - touch	41	1.3%	7	17.1%
track & field	53	1.7%	7	13.2%
dancing - classes	66	2.1%	7	10.6%
golf	508	16.1%	7	1.4%
gymnastics	39	1.2%	6	15.4%
other	96	3.0%	6	6.3%
rodeo	8	0.3%	5	62.5%
squash	32	1.0%	5	15.6%
skiing - water	100	3.2%	5	5.0%
swimming - rec.	853	27.1%	5	0.6%
motorecycling	23	0.7%	4	17.4%
hockey - ball	28	0.9%	4	14.3%
curling	163	5.2%	4	2.5%
hiking	362	11.5%	4	1.1%
boxing	3	0.1%	3	100.0%
cycling - comp.	11	0.3%	3	27.3%
school gym program	13	0.4%	3	23.1%
roller skating	19	0.6%	3	15.8%
rollerblading	106	3.4%	3	2.8%
tennis	142	4.5%	3	2.1%
aerobics	319	10.1%	3	0.9%
outdoor play	4	0.1%	2	50.0%
team handball	5	0.2%	2	40.0%
tobogganing	6	0.2%	2	33.3%
snowboarding	18	0.6%	2	11.1%
snowmobiling	28	0.9%	2	7.1%
boating	49	1.6%	2	4.1%
racquetball	59	1.9%	2	3.4%
camping - vehicle	133	4.2%	2	1.5%
skating - ice	189	6.0%	2	1.1%
walking	418	13.3%	2	0.5%
broomball	2	0.1%	1	50.0%
t-ball	2	0.1%	1	50.0%
handball	3	0.1%	1	33.3%
carpet bowling	4	0.1%	1	25.0%
wrestling	4	0.1%	1	25.0%
stair climbing	6	0.2%	1	16.7%
swimming - comp.	11	0.3%	1	9.1%
figure skating	14	0.4%	1	7.1%
hockey - floor	17	0.5%	1	5.9%
mountain climbing	21	0.7%	1	4.8%
race walking	22	0.7%	1	4.5%
bowling	115	3.6%	1	0.9%

Alberta Sport and Recreation Injury Survey, 1996

fishing	138	4.4%	1	0.7%
skiing - cross-country	143	4.5%	1	0.7%

Appendix III

Questionnaire

Appendix IV

Summary of Stakeholders Meeting

Reflection of Research

What confirmed what you suspected or already knew?

- That the three most injurious sports were boxing, rodeo, and rugby.
- The study appeals to a broad readership and is easy to read.
- There were a lot of injuries in sport and recreation activities.

What findings surprised you?

- That there were a lot of people who alpine ski three times/week. This may be because people ski for three days on the whole weekend.
- The high cost in Ontario related to activity injuries.
- The magnitude of injuries (actual numbers/estimates).
- The severity of injury in recreational cycling.
- That Alberta has a higher rate of injury than Ontario & Quebec.
- The number of days missed from school/work because of injury.
- That the rate of injury for competitive cycling is higher than wrestling, motorcycling, etc.

What were you hoping to see that was not included?

- Would like to know the number of boxers surveyed, confidence limits.
- May need to explain use of physicians for boxing, e.g. medical exams, physicians on-site.
- To note that the results include occurrences during training, and not just during competition.
- Would like information on children & youth (6 to 14 years); kinds of activities they are participating in & the kind of injuries they receive.
- Tables by age group.
- Actual participation rates would be helpful, but getting these are difficult; lump activities into "organized" and informal (questions 22 to 24 of survey regarding skill level); include Alberta Recreation Survey.
- Calculate minimal costs for injuries e.g. 242,000 x \$\$; these would include costs of visiting the doctor, staying in the hospital, costs affiliated with deaths, lost work time (see Appendix I). These calculations are best done by health economists. Can also look at a study from Sweden. Also, we should include a statement on the benefits of physical activity, so that we do not negatively impact sport and recreation participation.
- Reference to Australian Prevention Program.
- In table 11, differentiate between time off from work and time off from school (time off from school would be of interest to parents).
- Would have been nice to know how injuries were caused, e.g. head injuries in hockey linked to improper use of helmet. Mechanism of injuries could be considered in later studies.
- In future surveys, have areas for opened-ended responses (note, that these require a lot more money to do).
- Would like more interpretation of data for readers who are not researchers. This may also prevent some misinterpretation of data.

Conclusions: Based on your backgrounds and your understanding of sport, recreation and injury, what do these findings mean to you? What conclusions do you derive from these findings?

- There are a lot of injuries.
- Cast this information in a favourable light to promote physical activity, and not discourage participation.
- We must be careful to assist, rather than interfere, with the programming and planning of sport and recreation groups. We must come across as offering help and information/resources, as opposed to telling others what they should do and thus offending them.
- Currently we do not have collaboration with sport and recreation groups as demonstrated by their lack of interest/input into this meeting, except for boxing.
- More specific or in-depth surveys need to be conducted, e.g. a study to determine causes of injury.
- This survey is a good first step and a catalyst for encouraging sport and recreation groups to collaborate to tackle the injury problem in our province.
- There needs to be a stronger link between recreation and health.
- Gather research about preventive programs that have worked.
- Identify target groups to work with. Perhaps start with the higher participation activities because we could possibly see the biggest changes there. We also need to work with boxing and rodeo (highest rates of injury). Also consider targeting by age groups.
- Results may impact insurance rates, though the results will probably not be a surprise to insurance agencies.
- How do you ensure a consistent message, that benefits outweigh the risks, while still focusing on reducing injuries?
- How can we use the press effectively to communicate the results while avoiding sensationalism?
- How do you balance between safety and allowing play to be fun (risk vs. safety issue)?
- Refer to the International Play Association. There may be a perception that if something looks safe, then people are not as careful. May require more research on play.
- Would be interesting to repeat this survey in a couple of years, and look at trends of novice/informal activities such as rollerblading, snowboarding, backyard trampolines.
- The General Alberta Recreation Survey should be referenced.
- Other studies to look at: a study that was done with youth in Sweden; a study with youth in US
- If this survey includes \$ figures for injury, it should include \$ figures for benefits (again to show that benefits outweigh the risks).
- Can this report include scenarios that could be forwarded to media on a regular basis?

Desired Futures - What changes do you plan to see?

Research

- The Alberta Sport and Recreation Injury Survey has given birth to a series of related studies or projects in the area of sport and recreation injuries

- More studies of mechanisms and causes of injuries.
- The Alberta Sport and Recreation Injury Survey database has been used by a number of stakeholders in the injury prevention and physical activity fields.
- A biannual injury survey in Alberta is conducted.
- There will be more national data to compare with, in terms of context and relativity
- There will be more participation or input by sport bodies in survey development and interpretation.
- Cost analysis: methods, Alberta, Canada
- There will be a system to monitor sport and recreation injuries as part of a provincial monitoring system of injuries.
- There will be results available from focused research projects conducted as a result of survey findings.
- There will be better data on costs of sport and recreation injuries to the health system, employers, etc.

Partnerships

- The Injury Prevention Centre and Sport Medicine Council of Alberta will jointly develop a "consensus" on sport and recreation injuries in Alberta.
- There will be a cooperative effort (multi-stakeholder) in the design of safe sport, recreation and park facilities.
- That partnerships will be formed for collaborative efforts and advocacy.
- That Health, Recreation, Social Services and Community will work together to promote and implement actions for strong healthy communities and individuals.
- There will be a working group in place to take action on sport-related injury issues in Alberta.
- There will be an alliance, sharing of research and outcomes, and implementation of a preventative health philosophy with other world leaders such as Sweden & Australia.
- There will be an increase in prevention programs, a decrease in injuries and a decrease in dollars spent because of the collaborative efforts of IPC, Alberta Health, Alberta Schools Athletic Association, municipal planners, SMCA, ACFWB, and sport and recreation organizations.

Education/Health Promotion

- Safety courses are available and implemented in community leagues, schools (all grades), and sport and recreation groups.
- The general public is more educated and active about prevention activities during informal play, e.g. more and more people are stretching and warming up before their activity.
- Individuals take more responsibility for their actions, e.g. no more weekend warriors.
- An understanding of how many injuries occur in sport and recreation so people realize the importance of having qualified medical personnel on-site.
- Increased awareness of the Benefits of Recreation and how to participate safely during your leisure time.

Money/Resources

- There will be insurance breaks for participating in active living or recreation activities with demonstrated safety records.
- There will be grant funding through Alberta Health to assist or support sport and recreation organizations to continue to develop strategies and action plans to prevent injuries.
- There will be ongoing government funding available for intervention, evaluation and research.
- There will be a decrease in health care costs, with coverage still being provided for sport and recreation injuries, e.g. physiotherapy visits.
- There will be a sport and recreation prevention program that is part of a comprehensive strategy in the province for injury reduction; this will include leadership training, education, environment, and equipment.

Policy Development

- There will be policies, strategies and activities in place for recreation and sport organizations, municipal recreation groups, and Regional Health Authorities.
- Better access to safe equipment for low income persons

Outcome/Strategies

- There will be a 50% decrease in the number of injuries from sport and recreation activities.
- That 95% of Albertans participate in at least one sport or recreational activity in the previous 12 months.
- There will be a decrease in sport and recreation injuries as a result of efforts developed as a result of the study.
- There will be evidence of significant participation by sport organizations for injury prevention.

What Next with the Report?

- ACFWB researchers will add recommendations and make final revisions.
- The SMCA will format the final report.
- A final report (disk and hard copy) will be submitted to Alberta Community Development, Alberta Health, and representatives at today's meetings by the SMCA by mid-November.
- A clean copy of the database will be submitted to the SMCA by mid-December.
- Alberta Health will print the final formatted report.

What will be done with the Report?

- The results of this survey will be disseminated to key stakeholders and the public through press releases, an executive summary, articles published in other publications. The ACFWB and SMCA will consult with Alberta Community Development and Alberta Health on this.
- Show the report to some organizations in the Percy Page Centre to get feedback ideas on distribution
- ACFWB and SMCA will have a separate meeting to develop a communication/distribution plan.