

**Fédération Aéronautique Internationale (FAI)
International Parachuting Commission (IPC)**



2009

IPC SAFETY SURVEY REPORT

IPC Technical & Safety Committee

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The material in this report is for IPC use. The publication, in part or in whole, of this report, in any form, is subject to prior approval from the Chair of the IPC Technical & Safety Committee. Where information is published it must be carried in general or aggregate terms, without reference to specific countries.

1 INTRODUCTION

40 countries responded to the IPC Safety Survey 2009 (*Appendix 2, Table 14, page 21*). Responding countries for other years can be seen in that table.

1. Seven countries which responded for 2008, Belarus, Lithuania, Macedonia, New Zealand, Singapore, Turkey and Venezuela, did not respond for 2009.
2. Three countries which did not supply data in 2008 did so for 2009 – Belgium, Iceland and Montenegro.
3. Only Military jumping takes place in Thailand.
4. The questionnaire, which elicited 40 responses, was sent to approximately 80 countries; efforts being made at various times during 2010 to both obtain responses and to bring more countries into the reporting system. The response rate (40 in 80) was therefore 50%.
It is disappointing that there is variation in responses, see 1 and 2 above, and that so many countries do not take part in this annual survey. Both these factors, non-consistency and not-reporting, diminish greatly the value of a survey of this nature.
5. Some countries do not seem to have in place systems for compiling what are important statistics. This is a matter which those countries should address, for their own needs as well as for international survey use.

1.1 Aims

The aims of the survey were:

1. To collect information on the number of fatalities in skydiving worldwide in 2009.
2. To establish reliable and valid figures for skydiving risks during 2009.
3. To establish reliable and valid key figures for worldwide skydiving activity in 2009.
4. To establish reliable and valid risk figures based on statistics from four countries over a period of 47 years. (*see 3.3, page 9*)

2 METHODS

2.1 Information collection, preparation and distribution of the report

The method used to collect the data is the same as in previous years. This work was organised by the Technical & Safety Committee.

The survey form was generally the same as in previous years and this is designed to allow countries, and respondents, to become familiar with the survey and with reporting. The questions on the form were the same as for 2008. This permanent survey form facilitates the long term evaluation of skydiving safety worldwide, subject to consistent reporting as referred to in point 4, Introduction, above.

The methods used to analyse figures for this report are as used in previous years.

This report is produced by the Technical & Safety Committee of the International Parachuting Commission of the Fédération Aéronautique Internationale.

This 2009 Safety Report, with a Power Point presentation summary, was sent by e-mail to all FAI countries in which there is a parachuting organisation and for which the Technical & Safety Committee has a contact. The report, with the Power Point presentation, AAD report and presentation, and other material, will be distributed, on CD, at the meeting of the International Parachuting Commission in Bar, Montenegro, 29 – 30 January 2011.

Further copies, by e-mail, on CD or in hard copy format, as required, are available from the Technical & Safety Committee of IPC (e-mail: Imcnulty@skydiveireland.ie).

2.2 Data processing methods

The original figures submitted by the various countries are to be found in *Appendix 1, Tables 12/13, Pages 19/20* and are summarised in *Table 1, Page 4*. No changes have been made to data submitted, the figures being exactly as they have been returned by responding countries. Discrepancies in figures are as reported.

2.3 Survey Problems

The same problems were encountered with the 2009 Safety Survey as in previous years.

These problems are:

- 1 The relatively low response rate – 50%.
- 2 Most countries give estimates only, rather than exact figures.
- 3 Three of the 2009 respondents were new, for 2009, and seven of the 2008 respondents failed to respond for 2009.

Due to the moderate rate of response and to the mix in the respondents, it is not possible to give accurate overall figures for world skydiving activity in 2009, nor can direct comparison of results with previous years be made.

However, it should be noted that most countries with large numbers of skydivers and skydives did respond to the 2009 Safety Survey, as those countries consistently do. This gives a good deal of credibility to the current results.

Notwithstanding the problems encountered with a survey of this kind, the survey results are of value, when used with caution, and bearing the limitations in mind.

Thanks are extended to the people who collected and forwarded the data. A more comprehensive survey, with greater response, must continue to be the aim of the T&S Committee of IPC. All countries are again asked to please help in this gathering of information, the aim of which is to provide accurate and full data which will be of value in the areas of safety and training in the skydiving community, nationally and internationally.

3 RESULTS

The report results are based on three sources of information:-

- 1 **Total of respondents with data – 40 countries.**
- 2 **Exact data – the data of 17 countries which supplied exact figures about the number of skydivers, skydives and fatalities in 2009.**
- 3 **Key figure information – the numbers of skydivers, skydives and fatalities over a period of 47 years in the three countries – Finland, Norway and Sweden.**

Note – Only those countries which clearly indicated that their returns were ‘exact’ are included in the ‘exact’ data. All others are in the ‘estimated’ data.

Where any discrepancies arise it is because data is taken from the report sheets exactly as it is returned. No attempt is made to change or ‘correct’ figures.

3.1 Total

3.1.1 Skydiving Safety Figures 2009

Table 1, 2009

COUNTRY	Numbers		Number of fatalities				Leading causes of fatalities								jumps/jumpers	Validity	
	jumpers	jumps	total	stud.	intern.	exp.	cutaway no res.	low cut	no/low main act.	f/fall collision	fast canopies	other landing	tandem fatalities	other cause			
Argentina	714	14796	0													21	ESTI
Australia	3856	180549	4	2	1	1						2	1	1		47	ESTI
Austria	603	52443	0													87	ESTI
Belgium	1241	75154	1		1									1		61	ES/EX
Brazil	4450	65000	2		1	1				1				1		15	EXAC
Bulgaria	180	2500	0													14	EX/ES
Canada	18821	188350	1			1				1						10	ESTI
China (Peoples' R.)	116	26610	0													229	EXAC
Cyprus	75	1200	0													16	ESTI
Czech Rep.	1700	83000	4	1		3					2		2			49	ESTI
Denmark	2350	20760	0													9	ESTI
Estonia	156	2300	0													15	ESTI
Finland	2390	45485	0													19	EXAC
Germany	10720	266450	4		3	1		1	1					2		25	EXAC
Greece	280	3500	1		1					1						13	ESTI
Hong Kong, China	75	238	0													3	EXAC
Hungary	625	29654	1			1						1				47	EXAC
Iceland	10	191	0													19	EXAC
India	473	13640	1		1									1		29	EXAC
Italy	3500	180000	4		1	3						2		2		51	ESTI
Kazakhstan	1450	14245	0													10	ESTI
Kenya	45	740	0													16	EX/ES
Luxembourg	58	1826	0													31	EXAC
Montenegro	125	2030	0													16	EX/ES
Netherlands	3276	59415	0													18	EXAC
Norway	1468	52117	0													36	EXAC
Poland	1000	60000	3	1	2				1		2					60	ESTI
Portugal	1020	27500	0													27	ESTI
Russia	25766	285840	10	2	1	7	2	1	2			3	2			11	ES/EX
Saudi Arabia	1200	3000	0													3	EXAC
Serbia	425	8700	0													20	ESTI
Slovak Rep.	741	16244	0													22	EXAC
Slovenia	310	14000	0													45	ESTI
South Africa	1898	40256	4	1		3					2	1		1		21	ESTI
Spain	1860	196406	2	1		1				1				1		106	EXAC
Sweden	1501	60404	0													40	EX/ES
Switzerland	1950	71700	3	1		2					2			1		37	ES/EX
United Kingdom	50500	249250	1			1								1		5	EXAC
Uruguay	102	2000	0													20	EXAC
USA	73500	2300000	16	3	2	11			1		2	2	2	9		31	ESTI
TOTAL	40	220530	4717493	62	12	14	36	2	2	7	0	12	11	7	21		

Tandems 735028 735028 (See Table 18 for Tandem data)

GRAND TOTALS 955558 5452521 *Note:- Denmark JUMPER number, 2350 based on ratio of jumps/jumpers in previous reports*

- Of the ten biggest skydiving nations, in terms of skydives, made in 2009, three supplied exact figures - Germany, Spain and U.K.; two supplied a mixture of exact and estimated figures - Russia and Switzerland; five supplied estimated figures - Australia, Canada, Czech Republic, Italy and USA.
- The survey response indicates that in 2009, **5.45 million jumps were made by 955,558 jumpers in the 40 countries** which supplied data for the survey.
Note – These total figures INCLUDE TANDEMS (see table 1 above)
 Data on Tandem jumps made in each country is in *Table 18, Page 15*.
 Readers may extract other figures/data from this *Table 1*, as suits their needs.
- In terms of jumps per jumper in 2009, they range widely, from 3 to 229. This figure is influenced greatly by the type and nature of the skydiving operations in each country.
The figures in this point 3 do NOT take Tandem data into consideration.

3.1.2 Primary Skydiving Figures 1989 – 2009

Table 2, 2009

Year & No. countries	Number Jumpers	Number Jumps	Number Fatalities	Jumps		Jumpers per Fatality
				per Jumper	per Fatality	
1989 - 34 countries	340715	5564137	97	16	57362	3513
1990 - 32 countries	316994	5189991	70	16	74143	4528
1991 - 35 countries	245162	4848025	74	20	65514	3313
1992 - 35 countries	300586	4591980	59	15	77830	5095
1993 - 38 countries	370679	5267754	101	14	52156	3670
1994 - 40 countries	285253	5064125	70	18	72345	4075
1995 - 38 countries	322322	5562691	64	17	86917	5036
1996 - 40 countries	323300	6013691	76	19	79128	4254
1997 - 37 countries	404198	6843299	78	17	87735	5182
1998 - 33 countries	332603	5596753	72	17	77733	4619
1999 - 26 countries	335867	5594191	60	17	93237	5598
2000 - 27 countries	355405	5750464	63	16	91277	5641
2001 - 31 countries	417202	6872438	92	16	74700	4535
2002 - 33 countries	357155	5769010	73	16	79028	4893
2003 - 39 countries	402513	6335624	82	16	77264	4909
2004 - 39 countries	493250	5332756	53	11	100618	9307
2005 - 36 countries	806515	6147351	64	8	96052	12602
2006 - 39 countries	832683	5958194	51	7	116827	16327
2007 - 41 countries	837831	6222629	68	7	91509	12321
2008 - 44 countries	918436	5770169	70	6	82431	13121
2009 - 40 countries	955558	5452521	62	6	87944	15412

Table 2, 2009 - shows the following –

Risk Factor 1 - Jumps per one fatality for 40 countries which provided data for 2009 – 87,944

Risk Factor 2 - Jumpers per one fatality for 40 countries which provided data for 2009 - 15,412

These Risk Factors are inclusive of Tandems as they are overall figures for jumping.

It is not valid to make direct comparisons year-to-year, because of the differences in the numbers of respondents and in the mix of responding countries. Earlier figures are given for general information.

3.1.3 Fatalities in Subgroups

There are no reliable figures showing how many jumps and jumpers there were in the world in 2009, in the three categories used in this survey. The figures below are from 30 countries for which the data can be used to arrive at these figures, that is, a full breakdown of jumpers and jumps was given. The data from 30 countries - (111,458 Jumpers; 1,620,190 Jumps; 37 Fatalities) indicates that in 2009:-

Fatalities breakdown by percentage, against jumps made by each category, in 2009, in 30 countries only. There were 37 fatalities in these 30 countries. Please take special note of this – see note below.

Category	% of jumpers	% of jumps	% of fatalities	jumps per jumper
Students	70%	13%	22% (8)	3
Intermediate	11%	20%	14% (5)	26
Expert	19%	64%	65% (24)	48

Note – These figures exclude Austria, Belgium, Czech Republic, Denmark, Russia, Spain, Switzerland Sweden, Uruguay and USA, as some figures from these countries lack a breakdown.

The above figures are calculated from *Table 12, Appendix 1, Page 19*.

These figures have little/limited relevance to worldwide figures and they are of value only insofar as they show Jumpers/Jumps/Fatalities ratios for the 30 countries where data is available.

It is interesting to note that, with the exception of the distribution of the fatalities, the other figures are very similar to those for 2008, despite the mix of countries being different.

Distribution of fatalities in 2009, in numbers and percentages in each category, also showing figures for the years 1990 to 2008 inclusive.

Table 3, 2009

FATALITIES	1990	%	1991	%	1992	%	1993	%	1994	%	1995	%	1996	%	1997	%	1998	%	1999	%	2000	%
Student	24	34	27	38	23	39	29	29	19	27	12	19	13	17	22	28	16	22	16	27	19	30
Intermediate	23	33	20	28	21	36	30	30	27	39	24	37	20	26	20	26	4	6	15	25	15	24
Expert	23	33	25	35	15	25	42	41	24	34	28	44	43	57	36	46	52	72	29	48	29	46
TOTAL	70	100	72	101	59	100	101	100	70	100	64	100	76	100	78	100	72	100	60	100	63	100

FATALITIES	2001	%	2002	%	2003	%	2004	%	2005	%	2006	%	2007	%	2008	%	2009	%
Student	27	29	15	21	14	17	8	15	15	23	11	22	16	24	18	26	12	19
Intermediate	23	25	14	19	28	34	11	21	19	30	9	18	16	24	13	19	14	23
Expert	42	46	44	60	40	49	34	64	30	47	31	60	36	53	39	56	36	58
TOTAL	92	100	73	100	82	100	53	100	64	100	51	100	68	101	70	101	62	100

CAUSES	1990	%	1991	%	1992	%	1993	%	1994	%	1995	%	1996	%	1997	%	1998	%	1999	%	2000	%
Cut-away, no res.	11	14	12	16	12	20	9	9	15	21	11	17	4	5	5	6	1	1	2	3	3	5
Cut-away, low res.	20	30	15	20	3	5	12	12	1	1	15	23	12	16	14	18	2	3	7	12	5	8
No/low main pull	12	17	18	24	11	19	20	20	13	19	16	25	13	17	18	23	14	19	9	15	7	11
Other	27	39	29	39	33	56	60	59	41	59	22	34	47	62	41	53	55	76	42	70	48	76
TOTAL	70	100	74	99	59	100	101	100	70	100	64	99	76	100	78	100	72	99	60	100	63	100

CAUSES	2001	%	2002	%	2003	%	2004	%	2005	%	2006	%	2007	%	2008	%	2009	%
Cut-away, no res.	3	3	2	3	5	6	0	0	4	6	1	2	7	10	3	4	2	3
Cut-away, low res.	13	14	4	5	11	13	3	6	10	16	4	8	4	6	4	6	2	3
No/low main pull	12	13	12	16	11	13	3	6	6	9	9	18	5	7	5	7	7	11
Other	64	70	55	75	55	67	47	87	44	69	37	72	52	76	58	83	51	82
TOTAL	92	100	73	99	82	99	53	99	64	100	51	100	68	99	70	100	62	99

Distribution of 'Other' Fatalities

Table 4, 2009

<i>Other fatalities, 40 countries</i>	Number	% of 51
Fast Canopies	12	24%
Landing Errors	11	22%
Tandem	7	14%
Canopy Collisions	6	12%
Medical issues - 2 Medical problems, 1 Heart problem	3	6%
AAD-activated reserve entangled with jumper	2	4%
Collision with aircraft	2	4%
Brake-lock, spiralling main canopy	1	2%
Rotating main with twists, control not obtained, no action taken	1	2%
Reserve bridle around jumper's leg - reserve unable to deploy	1	2%
Reserve activation resulted in a downplane	1	2%
Low Navigation Collision	1	2%
Hand pull on main, AAD fired, impact before reserve deployment	1	2%
Equipment problems	1	2%
Main Entanglement	1	2%
TOTAL	51	100%

Three largest groupings into which 2009 fatalities fall (all 40 countries –all 62 fatalities)

- 1 The largest category - 12 (19% of 62), was 'Fast Canopies'.
- 2 The second largest grouping - 11 (18% of 62) was 'Landing Errors'
- 3 The third largest grouping is shared between two categories, No or Low Pull on Main and Tandem – 7 (11% of 62 in each case) in each category.

Fatalities with jumper still having serviceable equipment; all 40 countries, 62 fatalities.

- 1 It appears that 44 (71%) of the 62 fatalities happened with the jumper having at least one good parachute on his or her back.
- 2 It also appears that 30 (48%) of the 62 fatalities occurred after the successful deployment of the main parachute.

These figures are arrived at through scrutiny of the reported data and the discounting of some fatalities, e.g. medical problems, collision with aircraft, entanglements of any sort and situations arising from a malfunctioned or non-deployed main canopy.

3.2 Exact Figures

3.2.1 Primary Skydiving figures of 17 Countries in 2009

The number of countries that defined information for 2009 as 'exact' was 17. Some countries failed to indicate whether their figures were 'exact' or 'estimated'. In these cases the figures could not be taken as 'exact'.

Table 5, 2009

Year & No Countries	Number Jumpers	Number Jumps	Number Fatalities	Jumps		Jumpers per Fatality	
				per Jumper	per Fatality		
1990 - 22 countries	143553	2292146	39	16	58773	3681	
1991 - 26 countries	72198	1952213	28	27	69722	2579	
1992 - 18 countries	119608	1197311	19	10	63016	6295	
1993 - 13 countries	82618	1025791	25	12	41032	3305	
1994 - 14 countries	86075	1388851	24	16	57869	3586	
1995 - 12 countries	74641	1103272	14	15	78805	5332	
1996 - 16 countries	78119	976597	11	13	88782	7102	
1997 - 15 countries	89198	1138684	15	13	75912	5947	
1998 - 8 countries	76538	938229	12	12	78186	6378	
1999 - 12 countries	95216	1444175	25	15	57767	3809	
2000 - 11 countries	97808	1328789	20	14	66439	4890	
2001 - 10 countries	98015	1418673	21	14	67556	4667	
2002 - 13 countries	106479	1528415	26	14	58785	4095	
2003 - 12 countries	110097	1720115	30	16	57337	3670	
2004 - 17 countries	115906	1698758	20	15	84938	5795	
2005 - 17 countries	111622	1633921	16	15	102120	6976	
2006 - 17 countries	216605	1609715	15	7	107314	14440	
2007 - 16 countries	47850	1350307	12	28	112526	3988	
2008 - 16 countries	30260	751138	17	25	44185	1780	
2009 - 17 countries	With Tandems	239952	1248107	11	5	113464	21814
2009 - 17 countries	Without Tandems	79558	1087713	11	14	98883	7233

Risk factors for skydiving in 2009 in 17 countries with 'Exact' figures

Risk Factor 1 - (Fatality per Jumps): 1: 113,464 with Tandems

Risk Factor 2 - (Fatality per Jumpers): 1: 21,814 with Tandems

Risk Factor 2 - (Fatality per Jumps): 1: 98,883 without Tandems

Risk Factor 2 - (Fatality per Jumpers): 1: 7,233 without Tandems

The big differences in the figures from year to year are caused mainly by the mix of countries which submit exact figures. Various factors can result in the risk factors being very different.

These figures therefore are only 'true' insofar as they relate to the mix of reporting countries in any specific year. Comparison from year to year is NOT AT ALL valid.

3.2.2 Fatalities in subgroups in 17 Countries, whose figures for 2009 were 'Exact'

Table 6, 2009

Year	1990		1991		1992		1993		1994		1995		1996		1997		1998		1999		2000	
No. Countries	22		26		18		13		14		12		14		15		8		12		11	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
FATALITIES																						
Student	16	41	11	40	8	42	8	32	8	33	4	28	4	36	4	27	5	42	6	24	8	40
Intermediate	12	31	8	30	7	37	7	28	11	46	4	28	3	27	2	13	0	0	10	40	3	15
Expert	11	28	8	30	4	21	10	40	5	21	6	43	4	36	9	60	7	58	9	36	9	45
TOTAL	39	100	*27	100	19	100	25	100	24	100	14	99	11	99	15	100	12	100	25	100	20	100
CAUSES																						
cutaway, no res.	8	21	4	14	2	10	1	4	7	29	0	0	2	18	2	13	0	0	1	4	1	5
cutaway, low res.	8	21	8	29	1	5	4	16	1	4	3	21	2	18	3	20	0	0	5	20	3	15
no/low pull, main	8	21	6	21	2	10	3	12	1	4	6	43	3	27	3	20	1	8	3	12	3	15
other	15	36	10	36	14	74	17	68	15	63	5	36	4	36	7	47	11	92	16	64	13	65
TOTAL	39	100	*28	100	19	100	25	100	24	100	14	100	11	99	15	100	12	100	25	100	20	100
*There is a difference in the upper TOTAL and lower TOTAL columns for 1991.																						

Year	2001		2002		2003		2004		2005		2006		2007		2008		2009	
No. Countries	10		13		12		17		17		17		16		16		17	
	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%	no.	%
FATALITIES																		
Student	5	24	7	27	4	13	3	15	1	6	4	27	1	8	4	24	1	9
Intermediate	7	33	6	23	11	37	4	20	4	25	3	20	2	17	2	12	5	45
Expert	9	43	13	50	15	50	13	65	11	69	8	53	9	75	11	65	5	45
TOTAL	21	100	26	100	30	100	20	100	16	100	15	100	12	100	17	101	11	99
CAUSES																		
cutaway, no res.	0	0	2	7	3	10	0	0	1	6	0	0	1	8	0	0	0	0
cutaway, low res.	1	5	0	0	2	7	2	10	0	0	0	0	0	0	2	12	1	9
no/low pull, main	6	29	3	11.5	3	10	1	5	1	6	3	20	1	8	0	0	1	9
other	14	66	21	81	22	73	17	85	14	88	12	80	10	83	15	88	9	82
TOTAL	21	100	26	100	30	100	20	100	16	100	15	100	12	99	17	100	11	100

3.3 A 47-Year Study from Three Countries.

This is a study of skydiving safety over a period of 47 years, in Finland, Norway and Sweden.

Special importance is attached to this section of the report.

The compilation of accurate data results in validity of trends and comparisons, due to the consistency of the reporting and the accuracy of the figures.

Note – This valuable section of the Safety Report has contained data from four countries, Finland, France, Norway and Sweden up to and including 2007 figures. Regrettably, France did not supply data for 2009 and so the study for the 47 years 1963 – 2009 is reduced to three countries, Finland, Norway and Sweden.

It is hoped that the data for 2008 and 2009 will be forthcoming from France and that in the 2010 Safety Report it will be possible, with 2008, 2009 and 2010 figures, to revert to a four-country study.

3.3.1 The Utility

The figures from these three countries have been used over a long period of years because they are accurate and reliable figures in numbers of jumps, of jumpers and of fatalities. This gives the opportunity to:-

- 1 Establish authoritative figures for fatality risks in skydiving.
- 2 Give skydiving countries reliable and valid figures as reference for safety work.
- 3 Encourage countries to establish methods of collecting exact data for monitoring the safe development of skydiving.
- 4 Help eliminate 'opinion' and replace it with facts and figures as a basis for debate on safety.

It is important to be able to make valid comparisons and discern trends, if and when such exist, in safety advances or disimprovements. This is best done by long-term collection of figures from the same, reliable, sources. As might be expected, the fatality rates, as a ratio to jumps made, are high in the early years of this study.

The advances over time in knowledge, instruction and equipment show in the marked improvement in this rate in the more recent years of the study. The earlier years' figures still affect the long-term statistics.

There are factors which affect, over the years, movements and trends in the whole area of safety and incidents in parachuting, e.g., changes in type of equipment in use, advances in equipment design and features and advancement in safety devices. When any in-depth study or comparison of any period is made, such changes and developments must be taken into account.

In addition to the 47-year figures, the last five years, 2005 to 2009 inclusive, have been taken as a separate exercise. This gives an indication of trends in more recent times in the three countries: – Finland, Norway and Sweden.

3.3.2 Finland 1963 – 2009

Table 7, 2009

Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality /Jumps	Fatality /Jumpers
1963	338	0	10	0	338	10	na	na
1964	1111	0	30	0	1449	40	na	na
1965	1515	0	50	0	2964	90	na	na
1966	2057	1	70	1	5021	160	5021	160
1967	3298	0	100	1	8319	260	8319	260
1968	3798	2	100	3	12117	360	4039	120
1969	5532	0	150	3	17649	510	5883	170
1970	9633	0	220	3	27282	730	9094	243
1971	13005	2	250	5	40287	980	8057	196
1972	9600	0	250	5	49887	1230	9977	246
1973	11000	2	280	7	60887	1510	8698	216
1974	10586	0	300	7	71473	1810	10210	259
1975	12235	0	460	7	83708	2270	11958	324
1976	13586	1	534	8	97294	2804	12162	351
1977	11127	0	544	8	108421	3348	13553	419
1978	14289	0	635	8	122710	3983	15339	498
1979	17896	0	741	8	140606	4724	17576	591
1980	23597	1	855	9	164203	5579	18245	620
1981	24151	0	999	9	188354	6578	20928	731
1982	25362	0	999	9	213716	7577	23746	842
1983	30126	0	1191	9	243842	8768	27094	974
1984	32438	3	1111	12	276280	9879	23023	823
1985	30100	0	1055	12	306380	10934	25532	911
1986	30734	0	1284	12	337114	12218	28093	1018
1987	33820	0	1309	12	370934	13527	30911	1127
1988	42599	0	1546	12	413533	15073	34461	1256
1989	49071	1	1784	13	462604	16857	35585	1297
1990	52586	0	2118	13	515190	18975	39630	1460
1991	53453	0	2025	13	568643	21000	43742	1615
1992	54732	0	2032	13	623375	23032	47952	1772
1993	64167	3	2000	16	687542	25032	42971	1565
1994	47998	1	2169	17	735540	27201	43267	1600
1995	49546	1	2431	18	785086	29632	43616	1646
1996	52980	0	3280	18	838066	32912	46559	1829
1997	56287	1	3100	19	894353	36012	47071	1895
1998	55030	0	2565	19	949383	38577	49968	2030
1999	57536	0	2708	19	1006919	41285	52996	2173
2000	49828	1	3100	20	1056747	44385	52837	2219
2001	49963	1	3056	21	1106710	47441	52700	2259
2002	56181	1	3043	22	1162891	50484	52859	2295
2003	45317	1	2771	23	1208208	53255	52531	2315
2004	45132	1	2521	24	1253340	55776	52223	2324
2005	44723	0	3127	24	1298063	58903	54086	2454
2006	42779	0	3254	24	1340842	62157	55868	2590
2007	37699	0	2346	24	1378541	64503	57439	2688
2008	36758	0	2402	24	1415299	66905	58971	2788
2009	46935	0	3840	24	1462234	70745	60926	2948
TOTAL	1462234	24	70745				60926	2948

In Finland the transition from round to ram-air canopies began to occur on a larger scale in 1975. All experienced jumpers were using ram-air main canopies in 1980. The transition to ram-air student canopies took place from 1986 to 1988.

5 YEARS - 2005 TO 2009								
Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality/ Jumps	Fatality/ Jumpers
2005	44723	0	3127	0	44723	3127		
2006	42779	0	3254	0	87502	6381		
2007	37699	0	2346	0	125201	8727		
2008	36758	0	2402	0	161959	11129		
2009	46935	0	3840	0	208894	14969		
TOTAL	208894	0	14969	0				

Risk Factors	1963 – 2009	2005 – 2009
Risk Factor 1 (fatality - jumps)	1: 60,926	Nil - no fatalities
Risk Factor 2 (fatality - jumpers)	1: 2,948	Nil - no fatalities

3.3.3 Norway 1963 – 2009

Table 9, 2009

Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality /Jumps	Fatality /Jumpers
1963	0	0	0	0	0	0	na	na
1964	198	0	149	0	198	149	na	na
1965	813	0	200	0	1011	349	na	na
1966	1235	0	256	0	2246	605	na	na
1967	895	0	277	0	3141	882	na	na
1968	998	0	245	0	4139	1127	na	na
1969	2032	1	383	1	6171	1510	6171	1510
1970	3823	0	386	1	9994	1896	9994	1896
1971	6850	0	462	1	16844	2358	16844	2358
1972	7606	0	523	1	24450	2881	24450	2881
1973	6074	1	657	2	30524	3538	15262	1769
1974	8895	0	781	2	39419	4319	19710	2160
1975	14941	1	946	3	54360	5265	18120	1755
1976	17162	2	1088	5	71522	6353	14304	1271
1977	19898	1	1211	6	91420	7564	15237	1261
1978	18468	1	1403	7	109888	8967	15698	1281
1979	19674	0	1452	7	129562	10419	18509	1488
1980	22960	3	1645	10	152522	12064	15252	1206
1981	22090	2	1564	12	174612	13628	14551	1136
1982	23602	0	1645	12	198214	15273	16518	1273
1983	25478	0	1749	12	223692	17022	18641	1419
1984	29514	1	1965	13	253206	18987	19477	1461
1985	25159	1	2160	14	278365	21147	19883	1511
1986	38293	0	2455	14	316658	23602	22618	1686
1987	44635	2	2633	16	361293	26235	22581	1640
1988	45649	1	2754	17	406942	28989	23938	1705
1989	43939	0	2992	17	450881	31981	26522	1881
1990	44228	1	3371	18	495109	35352	27506	1964
1991	40308	0	2108	18	535417	37460	29745	2081
1992	42486	3	3522	21	577903	40982	27519	1952
1993	48876	0	3482	21	626779	44464	29989	2117
1994	40816	1	3343	22	667595	47807	30345	2173
1995	44170	0	3512	22	711765	51319	32353	2333
1996	46311	1	3849	23	758076	55168	32960	2399
1997	49545	1	1533	24	807621	56701	33651	2363
1998	46836	0	1102	24	854457	57803	35602	2408
1999	47943	1	2449	25	902400	60252	36096	2410
2000	50557	2	2120	27	952957	62372	35295	2310
2001	58203	0	1946	27	1011160	64318	37450	2382
2002	62636	2	2394	29	1073796	66712	37027	2300
2003	70436	1	2270	30	1144232	68982	38141	2299
2004	63019	1	1666	31	1207251	70648	38944	2279
2005	64552	0	3606	31	1271803	74254	41026	2395
2006	62630	0	3777	31	1334433	78031	43046	2517
2007	50698	0	3642	31	1385131	81673	44682	2635
2008	50753	0	3428	31	1435884	85101	46319	2745
2009	54654	0	4005	31	1490538	89106	48082	2874
TOTAL	1490538	31	89106				48082	2874

5 YEARS - 2005 TO 2009								
Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality/ Jumps	Fatality/ Jumpers
2005	64552	0	3606	0	64552	3606		
2006	62630	0	3777	0	127182	7383		
2007	50698	0	3642	0	177880	11025		
2008	50753	0	3428	0	228633	14453		
2009	54654	0	4005	0	283197	18458		
TOTAL	283197	0	18458					

Risk Factors	1963 – 2009	2005 - 2009
Risk Factor 1 (fatality - jumps)	1: 48,082	Nil – no fatalities
Risk Factor 2 (fatality - jumpers)	1: 2,874	Nil – no fatalities

3.3.4 Sweden 1963 – 2009

Table 10, 2009

Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality /Jumps	Fatality /Jumpers
1963	879	0	220	0	879	220	na	na
1964	1526	0	277	0	2405	497	na	na
1965	1269	1	377	1	3674	874	3674	874
1966	2151	0	371	1	5825	1245	5825	1245
1967	2920	1	487	2	8745	1732	4373	866
1968	4629	0	639	2	13374	2371	6687	1186
1969	6587	0	849	2	19961	3230	9981	1615
1970	7268	0	907	2	27229	4127	13615	2064
1971	8307	3	1049	5	35536	5176	7101	1035
1972	10810	0	1061	5	46346	6237	9269	1248
1973	12748	2	1023	7	59094	7260	8442	1037
1974	13064	1	1010	8	72158	8270	9020	1034
1975	17675	1	1144	9	89833	9414	9981	1046
1976	20749	0	1586	9	110582	11000	12287	1222
1977	25326	3	2009	12	135908	13019	11326	1085
1978	26561	1	2150	13	162469	15149	12498	1165
1979	30954	1	2400	14	193423	17559	13816	1254
1980	31509	2	2441	16	224932	20000	14058	1250
1981	29775	2	2564	18	254707	22564	14150	1254
1982	30726	1	2137	19	285433	24701	15023	1300
1983	35698	2	2581	21	321131	27282	15292	1299
1984	43692	2	2681	23	364823	29963	15862	1303
1985	46208	0	2278	23	411031	32241	17871	1402
1986	52490	0	2849	23	463521	35090	20153	1526
1987	51327	1	2448	24	514848	37538	21452	1564
1988	57715	1	2436	25	572563	39974	22903	1599
1989	70475	1	2969	26	643038	42943	24732	1651
1990	77257	1	3258	27	720295	46201	26678	1711
1991	95415	0	3175	27	815710	49376	30211	1829
1992	103706	0	3635	27	919416	53011	34052	1963
1993	105497	4	3662	31	1024913	56673	33062	1828
1994	99724	2	3346	33	1124637	60019	34080	1819
1995	112512	1	3563	34	1237149	63582	36387	1870
1996	109950	1	3733	35	1347099	67315	38489	1923
1997	118437	0	3214	35	1465536	70529	41872	2015
1998	96758	1	3088	36	1562294	73617	43397	2045
1999	111454	0	2793	36	1673748	76410	46493	2123
2000	108128	0	3158	36	1781876	79568	49497	2210
2001	125465	3	3022	39	1907341	82590	48906	2118
2002	134429	1	2750	40	2041770	85340	51044	2134
2003	109004	0	2651	40	2150774	87991	53769	2200
2004	96013	0	2521	40	2246787	90512	56170	2263
2005	96206	1	6478	41	2342993	96990	57146	2366
2006	94900	0	6920	41	2437893	103910	59461	2534
2007	75100	0	6896	41	2512993	110806	61293	2703
2008	83213	0	6628	41	2596206	117434	63322	2864
2009	66081	0	7178	41	2662287	124612	64934	3039
TOTAL	2662287	41	124612				64934	3039
5 YEARS - 2005 TO 2009								
Year	Jumps	Fatalities	Jumpers	Account Fatalities	Account Jumps	Account Jumpers	Fatality/ Jumps	Fatality/ Jumpers
2005	96206	1	6478	1	96206	6478	96206	6478
2006	94900	0	6920	1	191106	13398	191106	13398
2007	75100	0	6896	1	266206	20294	266206	20294
2008	78305	0	6628	1	344511	26922	344511	26922
2009	66081	0	7178	1	410592	34100	410592	34100
TOTAL	410592	1	34100				410592	34100

Risk Factors	1963 – 2009	2005 - 2009
Risk Factor 1 (fatality – jumps)	1: 64,934	1: 410,592
Risk Factor 2 (fatality – jumpers)	1: 3,039	1: 34,100

3.3.5 Three Countries - Finland, Norway, Sweden – 1963 to 2009

Key safety figures for the three countries, for the two periods, 1963 – 2009 and 2005 - 2009, are presented in Table 11 and Table 11A.

Table 11, 2009

47 Year Period 1963 - 2009					
Country	Jumps	Fatalities	Jumpers	Risk 1	Risk 2
				Fatality - Jumps	Fatality - Jumpers
Finland	1462234	24	70745	60926	2948
Norway	1490538	31	89106	48082	2874
Sweden	2662287	41	124612	64934	3039
TOTAL	5615059	96	284463	58490	2963

Table 11A, 2009

5 Year Period 2005 - 2009					
Country	Jumps	Fatalities	Jumpers	Risk 1	Risk 2
				Fatality - Jumps	Fatality - Jumpers
Finland	208894	0	14969		
Norway	283197	0	18458		
Sweden	410592	1	34100	410592	34100
TOTAL	902683	1	67527	902683	67527

SPECIAL QUESTIONS

3.4 Special Questions

The special questions, aimed at ascertaining trends, if such exist, and gathering specific information, were asked again for the 2009 survey.

3.4.1 Question1 – How many first jumps were made in your country in 2009?

By Static Line, IAD, JAD (total number)

By Accelerated Freefall (total number)

By Tandem Freefall (total number)

First Jumps – 37 countries supplied data for this question

45,046 were made by Static Line, IAD/JAD

37,034 were made by AFF

500,469 were made by Tandem

Note – the total number of Tandem jumps made, see *Table 1*, was **735,028**. The difference in numbers arises because some countries do not regard Tandem jumps as First Jumps, in the sense of Static Line or AFF, but rather as recreational jumps. Figures are used as reported.

Tandem 1st jumps were in the ratio of 11 to 1 against Static Line and IAD/JAD first jumps

Tandem 1st jumps were in the ratio of 14 to 1 against AFF first jumps.

Tandem 1st jumps were in the ratio of 6 to 1 against Static Line, IAD/JAD and AFF combined.

3.4.2 How widely are Square Mains and Square Reserves used on first jumps?

38 Countries (of 40 total responses) answered this question, and the following are the results.

- 1 In 26 countries (68% of 38) all first jumps were made on Ram-air Mains and Ram-air Reserves.
- 2 In 31 countries (82% of 38) all first jumps were made on Ram-air Mains
- 3 In 37 countries (97% of 38) 50% or more of first jumps were on Ram-air mains.
- 4 In 33 countries (87% of 38) 70% or more of first jumps were made with both Ram-air mains and Ram-air reserves.
- 5 In 2 countries (5% of 38) 50% or more of first jumps were on Round mains.
- 6 One country reported all first jumps having been made on round mains.

The majority of countries now use Ram-air mains and Ram-air reserves on First Jumps.

3.4.3 What percentage of all skydivers use AAD regularly?

39 countries answered this question and the responses indicate that the great majority of skydivers in all of these countries use AAD. (see *Appendix 1, Table 13, Page 20*)

Students

- 1 ALL Students in 38 countries (97% of 39) used AAD.
- 2 In 39 countries AAD was used by at least 90% of Students.

Intermediate

- 3 ALL Intermediate jumpers in 22 countries (56% of 39) used AAD.
- 4 In 38 countries (97% of 39) 50% or more of Intermediate jumpers used AAD. In the majority of cases the percentage use by Intermediate jumpers was in the +75% range, rather than at a lower level.

Expert

- 5 ALL Expert skydivers in 13 countries (33% of 39) used AAD.
- 6 In 36 countries (92% of 39) 50% or more of Expert jumpers used AAD. One country reported 20% usage, another country 30% and the 37 other countries showed figures over 50%, the vast majority showing over 80% usage by experts.

3.4.4 How many times in 2009 did the use of AAD save jumpers' lives?

37 countries answered this question, in one way or another.

From the responses it would appear that at least 38 lives were saved by the use of AAD in 2009 (if it can be assumed that an AAD firing is a life saved). Table 13, (*Appendix 1, Page 20*) gives the responses from the various countries.

It should also be noted that firings/saves may not be reported, due to field servicing of AADs.

The separate 2009 AAD report should be consulted for further information on AAD saves in 2009 and previous years, along with various comments on AAD use.

Please note – Any difference in numbers of saves in this Safety Report and in the AAD Report is due to the fact that the reports are extracted from separate forms and there may also be differences in the countries which respond to the Safety and AAD reports.

One of the 2009 fatalities occurred in the category *No pull/Low pull on Main* by an Expert Jumper. This jumper's equipment was fitted with an AAD which was not switched on.

3.4.5 Fatalities breakdown between male and female

Of the 40 responding countries 17 reported fatalities, totalling 62.
See various tables, *Table 1, Page 4*, in particular, for details.

Of the 62 fatalities 58 (94%) were male and 4 (6%) were female.

Year	Total	Male	Female	Year	Total	Male	Female
2009	62	58 (94%)	4 (06%)	2001	90	75 (83%)	15 (17%)
2008	70	63 (90%)	7 (10%)	2000	63	57 (90%)	6 (10%)
2007	68	64 (94%)	4 (06%)	1999	60	55 (92%)	5 (08%)
2006	51	40 (78%)	11 (22%)	1998	72	53 (74%)	13 (18%)
2005	64	54 (84%)	10 (16%)	1997	78	64 (82%)	13 (17%)
2004	53	44 (83%)	10 (16%)	1996	76	65 (86%)	11 (14%)
2003	82	67 (82%)	9 (17%)	1995	64	55 (86%)	9 (14%)
2002	73	?	?				

3.4.6 How many Tandem Descents were made in your country in 2009?

Table 18, 2009

COUNTRY	NUMBER OF TANDEM	TANDEM FATALITIES	SOLO JUMPS	SOLO FATALITIES	TANDEM AS % OF SOLOS				
					2009	2008	2007	2006	2005
Argentina	9,800	0	14,796	0	66%	49%	36%	100%	
Australia	108,081	1	180,549	3	60%	46%	38%	27%	27%
Austria	7,764	0	52,443	0	15%	13%	5%	10%	6%
Belarus						1%	1%		
Belgium	7,498	0	75,154	1	10%		4%	9%	8%
Brazil	30,000	0	65,000	2	46%	28%	29%		
Bulgaria	250	0	2,500	0	10%	6%	3%	3%	5%
Canada	13,000	0	188,350	1	7%	6%	7%	9%	9%
China (Peoples' R.)	17	0	26,610	0	0%	0%	0%	0%	0%
Cyprus	45	0	1,200	0	4%	3%	1%	1%	2%
Czech Rep.	18,500	2	83,000	2	22%	17%	18%	11%	10%
Denmark	1,565	0	20,760	0	8%	5%	5%	4%	3%
Estonia	111	0	2,300	0	5%	2%	3%	2%	1%
Finland	1,450	0	45,485	0	3%	3%	3%	2%	2%
France							5%	5%	5%
Germany	38,250	0	266,450	4	14%	12%	9%	10%	9%
Greece	200	0	3,500	1	6%	5%	5%	3%	2%
Hong Kong, China	0	0	238	0	0%	0%	0%	0%	0%
Hungary	5,486	0	29,654	1	19%	14%	11%	10%	5%
Iceland	0	0	191	0	0%				
India	0	0	13,640	1	0%	0%		0%	
Italy	28,500	0	180,000	4	16%	4%	5%	5%	2%
Kazakhstan	55	0	14,245	0	0%	0%	0%	0%	1%
Kenya	46	0	740	0	6%	4%	3%	2%	2%
Latvia								5%	
Lithuania						4%	4%		
Luxembourg	149	0	1,826	0	8%	8%	6%	7%	10%
Macedonia						0%			
Montenegro	0	0	2,030	0	0%		0%		
Netherlands	14,366	0	59,415	0	24%	16%	13%	13%	12%
New Zealand						104%		117%	124%
Norway	2,537	0	52,117	0	5%	4%	4%	4%	3%
Poland	1,500	0	60,000	3	3%	6%		13%	8%
Portugal	5,000	0	27,500	0	18%	17%	6%	6%	5%
Russia	no data	2	285,840	8		0%		2%	1%
Saudi Arabia	500	0	3,000	0	17%	22%	1%	0%	67%
Serbia	450	0	8,700	0	5%	4%	2%	1%	0%
Singapore						0%			
Slovak Rep.	2,371	0	16,244	0	15%	15%	9%	9%	6%
Slovenia	2,000	0	14,000	0	14%	0%	11%	9%	
South Africa	10,732	0	40,256	4	27%	21%	15%	11%	11%
Spain	21,608	0	196,406	2	11%	11%	9%	8%	7%
Sweden	5,677	0	60,404	0	9%	6%	7%	6%	5%
Switzerland	9,520	0	71,700	3	13%	12%	11%	11%	9%
Turkey						5%	3%		1%
United Kingdom	38,000	0	249,250	1	15%	17%	14%	16%	11%
Uruguay	0	0	2,000	0	0%	0%			
USA	350,000	2	2,300,000	14	15%	13%	12%	14%	11%
Venezuela						9%			
TOTALS for 40 countries	735,028	7	4,717,493	55	16%	13.7%	10.6%	12.2%	9.5%

If the Russian Solo Jumps, 285,840, are deducted from the total of Solo jumps - 4,717,493, to allow for the fact that no Tandem jump numbers are available from Russia for 2009, then the Tandem/Solo jumps percentage for the remaining 39 countries is 17%.

Tandem jumps amounted to 13.5% of all jumps, Solos plus Tandems, made in 2009

2009	2008	2007	2006	2005
13.5%	12.1%	9.6%	10.6%	9.5%

Tandem jumps compared to Solo jumps in 2009 were 16%

2009	2008	2007	2006	2005
16%	13.7%	10.6%	12.2%	10.4%

Note:- Both the above sets of percentages for 2009 are somewhat skewed, in that the Solo Jumps made in Russia in 2009 are in the calculations, but the number of Tandem Jumps made in Russia in 2009 is not known.

There were 7 Tandem fatalities in 2009, in a total of 62 fatalities (11.3% of 62).

3.4.7 How many of the 2009 fatalities were First Jump Students?

6 (10%) of the 62 fatalities in 2009 were First Jump Students.

Year	Total Fatalities	First jump fatalities
2009	62	6 (10%)
2008	70	8 (11.4%)
2007	68	5 (07.4%)
2006	51	5 (09.8%)
2005	64	3 (04.7%)
2004	53	3 (05.7%)
2003	82	2 (02.4%)
2002	73	8 (11%)
2001	92	12 (13%)
2000	63	6 (09.5%)

3.4.8 What percentage of Jumpers use RSL on Reserves – Student, Intermediate, Expert ?

37 countries supplied information on this matter.

Students

In 31 countries (84% of 37) 100% of Students use RSL on Reserves

In 35 countries (95% of 37) 50% and over of Students use RSL on Reserves

Intermediate Jumpers

In 9 countries (24% of 37) 100% of Intermediate Jumpers use RSL on Reserves

In 22 countries (59% of 37) 50% and over of Intermediate Jumpers use RSL on Reserves

Expert Jumpers

In 5 countries (14% of 37) 100% of Expert Jumpers use RSL on Reserves

In 15 countries (41% of 37) 50% and over of Expert Jumpers use RSL on Reserves

Note – In Australia the Operational Regulations AAD/RSL Requirements state that:-

All Freefall Descents made by Parachutists who hold less than an APF Certificate 'D' (minimum 200 jumps) must be made with equipment fitted with an operational AAD.

All Freefall Descents made by Parachutists who hold a Certificate 'D' must be made with equipment fitted with either:

- (i) A functional RSL; or*
- (ii) An operational AAD.*

A Tandem Descent must not be made unless the equipment is fitted with an operational AAD approved by the manufacturer of the equipment.

No APF statistics are collected on what percentage of jumpers use RSLs on reserves.

3.4.9 Comments

14 of the 40 responding countries added comments. This additional information explained the methodology used in collecting data in particular countries and, by giving details of how fatalities occurred helped to confirm the categories into which some fatalities should be put.

4 SOME CONCLUSIONS

4.1 Equipment

By carefully and conservatively estimating the replies the conclusion may be reached that 44 (71%) of the 62 fatalities occurred with the skydiver having at least one good parachute. For this figure of 44 some categories and individual fatalities are excluded. Total exclusions - 18. These fatalities are excluded as in some cases not enough detail is known about the fatality or the issue of having a good parachute remaining is not relevant to the fatality.

Year	Percentage	Year	Percentage	Year	Percentage	Year	Percentage
2009	71%	2004	66%	1999	85%	1994	81%
2008	69%	2003	79%	1998	64%	1993	75%
2007	47%	2002	94%	1997	85%	1992	59%
2006	73%	2001	84%	1996	71%	1991	75%
2005	53%	2000	73%	1995	95%		

By cautious estimation it could be concluded that 10 of the fatalities (16% of 62) might have been avoided by the use of an AAD.

Year	Percentage	Year	Percentage	Year	Percentage	Year	Percentage
2009	16%	2004	11%	1999	38%	1994	57%
2008	14%	2003	20%	1998	26%	1993	56%
2007	24%	2002	23%	1997	38%		
2006	16%	2001	35%	1996	26%		
2005	16%	2000	27%	1995	73%		

4.2 Instruction and reinforcement of Training

It appears that 49 (79%) of the 62 fatalities may have been caused by human error on the part of the skydiver.

79% is a very high percentage. This percentage is consistently high over many years and it points to the constant need to reinforce training and safety procedures at all levels in skydiving.

Year	Percentage	Year	Percentage	Year	Percentage	Year	Percentage
2009	79%	2004	79%	1999	84%	1994	94%
2008	67%	2003	77%	1998	68%	1993	90%
2007	81%	2002	90%	1997	88%		
2006	80%	2001	94%	1996	92%		
2005	84%	2000	80%	1995	94%		

The 2008 figure is low due to there being a relatively large number of fatalities arising from medical issues, in that year.

It appears that at least 30 of the 62 fatalities (48%) occurred after the successful deployment of the main parachute.

Year	Percentage	Year	Percentage	Year	Percentage
2009	48%	2007	50%	2005	38%
2008	50%	2006	41%	2004	49%

HUMAN ERROR HAS ALWAYS BEEN, AND CONTINUES TO BE, THE MAJOR FACTOR IN SKYDIVING FATALITIES. THE ATTENTION OF ALL PERSONNEL INVOLVED IN COACHING AND TRAINING, AT INTERNATIONAL, NATIONAL, REGIONAL & LOCAL LEVELS MUST BE CONTINUOUSLY FOCUSED ON SAFETY TRAINING AND REINFORCEMENT.

SAFETY IS BEST TAUGHT AT DROPZONES, WHERE STUDENTS, FROM THEIR FIRST JUMP, AND AS THEY PROGRESS, HAVE THEIR ATTENTION DRAWN TO SAFETY ISSUES AND SAFE CONDUCT. THIS MUST BE A MAJOR FEATURE AT EVERY PARACHUTING CENTRE.

CANOPY HANDLING AND LANDING SKILLS SHOULD FEATURE PROMINENTLY.

4.3 Final Figures

The number of fatal skydiving accidents in 2009, in the 40 countries which responded to the IPC Safety Survey, was 62.

(See Table 2, page 5, for figures for the twenty years 1989 – 2009, but please note that these yearly figures are not valid for comparison with one another, due to the mix of responding countries over the years.)

The number of jumps (including Tandems) in the 40 responding countries was - 5,452,521

The number of jumpers (including Tandems) in the 40 responding countries was - 955,558

(see Table 1, Page 4, for figures with and without Tandem jumps/jumpers)

5 SUMMARY

The aims of the 2009 survey were -

- 1 To collect information on the number of fatalities in skydiving, worldwide, in 2009. The aim was not achieved as the response was insufficient.

There were 62 fatalities in 40 countries.

- 2 To establish reliable and valid figures for worldwide skydiving activity in 2009. This aim was not achieved due to the limited response. From the 40 responding countries the following risk factors were determined –

Risk Factor 1	1: 87,944	(Fatality per number of jumps)
Risk Factor 2	1: 15,412	(Fatality per number of jumpers)

- 3 To establish reliable and valid figures for worldwide skydiving activity in 2009. This aim was not achieved as only 40 countries responded to the survey. Of the 40 responding countries, 17 supplied exact figures. 23 countries supplied either estimated figures or a mixture of exact and estimated figures.
- 4 To establish reliable and valid risk figures based on statistics from 4 countries over a 47-year period. This aim was not achieved and the target was changed to establishing these figures from 3 countries over a 47-year period.

Risk Factor 1	1: 58,490	(Fatality per number of jumps)
Risk Factor 2	1: 2,963	(Fatality per number of jumpers)

6 LIST OF APPENDICES

- 1 Information supplied by 40 countries, *Tables 12/13, Pages 19 and 20*
- 2 List of responding countries, 1988 to 2009, *Table 14, Page 21*
- 3 Data from USA, the world's largest skydiving country, for 27 years, 1983 – 2009, *Table 15, Page 22*
- 4 Collection sheet of exact information, *Tables 16/17, Page 23*

7 APPENDICES

Appendix 1, Table 12, 2009

COUNTRY	Number of jumpers in 2009				Number of jumps made in 2009				No. of fatalities in 2009				Leading causes of fatalities								
	total	students	intern.	experts	total	students	intern.	experts	total	student	intern.	expert	cutaway, no res.	low cut	no ac/ low main	F/F collis	Fast canopies	other landing	tandem fatalities	other causes	
Argentina	714	164	300	250	14796	2589	6709	5498	0												
Australia	3856	1256	1077	1623	180549	2408	29206	148935	4	2	1	1						2	1	1	
Austria	603	291	312	Inter/Exp	52443	5274	47169	Inter/Exp	0												
Belgium	1241	no breakdown			75154	no breakdown			1		1									1	
Brazil	4450	2500	850	1100	65000	10000	25000	30000	2		1	1		1						1	
Bulgaria	180	45	100	35	2500	700	800	1000	0												
Canada	18821	16631	977	1213	188350	3883	35013	149454	1			1		1							
China, People's Rep	116	28	12	76	26610	1732	1342	23536	0												
Cyprus	75	50	15	10	1200	150	350	700	0												
Czech Republic	1700	no breakdown			83000	no breakdown			4	1		3					2		2		
Denmark	2350	no breakdown			20760	no breakdown			0												
Estonia	156	80	32	44	2300	331	587	1382	0												
Finland	2390	1600	400	400	45485	4685	20000	20400	0												
Germany	10720	2310	2280	6130	266450	24650	41650	200150	4		3	1		1	1					2	
Greece	280	180	50	50	3500	1500	1000	1000	1		1					1					
Hong Kong, China	75	50	18	7	238	44	173	21	0												
Hungary	625	175	181	269	29654	1922	5088	22724	1			1						1			
Iceland	10	0	4	6	191	0	67	124	0												
India	473	149	200	124	13640	3249	4043	6348	1		1									1	
Italy	3500	875	1225	1400	180000	54000	36000	90000	4		1	3						2		2	
Kazakhstan	1450	1135	190	125	14245	5250	3035	5960	0												
Kenya	45	12	14	16	740	246	212	282	0												
Luxembourg	58	8	37	12	1826	101	1050	675	0												
Montenegro	125	65	35	25	2030	130	400	1500	0												
Netherlands	3276	1200	700	1376	59415	10307	18579	30529	0												
Norway	1468	412	654	402	52117	7008	15036	30073	0												
Poland	1000	200	350	450	60000	3000	30000	27000	3	1	2			1		2					
Portugal	1020	450	270	300	27500	1800	9500	16200	0												
Russia	25766	no breakdown			285840	52772	22521	210547	10	2	1	7	2	1	2			3	2		
Saudi Arabia	1200	200	300	700	3000	1600	400	1000	0												
Serbia	425	180	80	165	8700	1800	2400	4500	0												
Slovak Republic	741	361	133	247	16244	1686	4796	9762	0												
Slovenia	310	80	80	150	14000	1500	2500	10000	0												
South Africa	1898	1213	315	370	40256	7940	14464	17852	4	1		3				2	1			1	
Spain	1860	no breakdown			196406	no breakdown			2	1		1					1			1	
Sweden	1501	431	481	589	60404	4297	56107	Inter/Exp	0												
Switzerland	1950	no breakdown			71700	17150	54550	Inter/Exp	3	1		2					2			1	
United Kingdom	50500	45500	1200	3800	249250	58250	14000	177000	1			1								1	
Uruguay	102	31	17	54	2000	no breakdown			0												
USA	73500	41000	32500	Inter/Exp	2300000	33000	2267000	Inter/Exp	16	3	2	11			1		2	2	2	9	
TOTAL	40	220530	118862	12577	21518	4717493	324954	345921	1244152	62	12	14	36	2	2	7	0	12	11	7	21

Where a composite figure is given no attempt is made to break down this figure.

Note – This table shows the Tandem Fatalities, but it does NOT show Tandem Jumps and Tandem Jumpers figures.

Appendix 1, Table 13, 2009

Safety Survey 2009	Question 1			Question 2				Question 3			Qs. 4	2009	Quest. 5		Ques. 6	Ques. 7	Ques. 8		
COUNTRY	First Jumps made by			% of 1st Jumps on				AAD use by %			AAD	Fatalities	Fatalities	Tandem	1st Jump	RSL on Reserve			
	stat. line or IAD	AFF	tandem	Round main	Sq. main	Round res	Sq. res	Student	Intern.	Expert	saves	Fatalities	Male	Fern.	Descents	Fatalities	Stud	Inter	Exp
																	%	%	%
Argentina	50	5	250		100	2	98	100	60	95	0	0			9800		100	50	50
Australia	338	1142	113		100		100	100	100	80	2	4	4		108081	1	100	note - page 16	
Austria					100		100	100	99	99		0			7764		100	?	?
Belgium	106	105	0		100		100	100	100	100	2	1	1		7498		100	100	100
Brazil	500	850	0		100		100	100	95	85	1	2	2		30000		100	75	1
Bulgaria	150	200	180		100		100	100	100	90	1	0			250		100	100	80
Canada			11000		100	15	85	100	90	80	5	1	1		13000		100	90	75
China, Peoples' Rep.	761	298	17	50	50	50	50	100	100	100	0	0					3	2	2
Cyprus	40	5	40		100		100	100	100	100	0	0			45		100	100	90
Czech Rep	4100	57	18000	10	90	60	40	100	95	80	2	4	3	1	18500	1	100	80	40
Denmark (note 1)	1800	0	1565		100		100	100	100	100	0	0			1565		100	?	?
Estonia	55	0	111		100		100	100	100	94	0	0			111		100	60	35
Finland	962	147	1370		100		100	100	99	99	1	0			1450		100	70	70
Germany	750	1390	380	1	99	2	98	100	99	97	4	4	4		38250		99	12	1
Greece	120	60	200		100		100	100	100	90	0	1	1		200		100	85	35
Hong Kong, China	3	2	0		100		100	100	100	100		0			0		100	100	100
Hungary	43	30	0	1	99	1	99	100	100	50	4	1	1		5486		100	50	20
Iceland	0	0	0					100	100	100	0	0			0		100	0	0
India	123	0	0		100		100	100	100	90	3	1	1		0		100	100	100
Italy	100	700	20000		100		100	100	99	99	1	4	4		28500		100	100	99
Kazakhstan	915		55	100		100		100	100	90	0	0			55		0	0	20
Kenya	0	18	46		100		100	100	100	100	0	0			46		100	100	100
Luxembourg	12	0	0		100		100	100	100	100	0	0			149		100	1	0
Montenegro	130	0	0		100		100	100	50	20	0	0			0		100	50	50
Netherlands	1048	282	14366	4	96			100	95	85	1	0			14366		100		
Norway	255	223	2469		100		100	100	96	98	0	0			2537		100	90	90
Poland	no data	no data	no data		100			90	70	70	2	3	3		1500	1	no data	no data	no data
Portugal	270	180	2000		100		100	100	100	100	0	0			5000		100	100	100
Russia	no data	no data	no data					100	100	100	no data	10	10		no data	2			
Saudi Arabia		40	500		100		100	100	100	100	4	0			500				
Serbia	100	0	450		100		100	100	70	80		0			450		50	10	0
Slovak Republic	235	28	1	1	99	15	85	100	100	100	1	0			2371		80	50	30
Slovenia	60	20	2000		100		100	100	70	30	0	0			0		50	20	10
South Africa	1038	175	10732		100		100	100	50	62	2	4	4		10732		100	20	10
Spain	180	821	21608		100		100	100	100	100	1	2	2		21608		100	50	10
Sweden	231	200	5677		100		100	100	100	70	0	0			5677		100	n/a	n/a
Switzerland	150	880	n/a		100		100	100	95	90	0	3	3		9520		100	20	>10
United Kingdom	17398	1176	37339		100	1	99	100	100	95	1	1	1		38000		100	100	70
Uruguay	23	0	0		100		100	100			0	0					100		
USA	13000	28000	350000		100	5	95				unknown	16	13	3	350000	1	100	60	50
TOTALS (40 countries)	45046	37034	500469								38	62	58	4	733011	6			

Note 1 - In Denmark all first jump students must make a Static Line jump before starting an AFF programme.

Appendix 2, Table 14, 2009

Responses to Safety Surveys 1988 – 2009

COUNTRY	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Algeria									1													
Argentina		1	1	1			1		1	1						*			1	1	1	1
Australia	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Austria	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Belarus									1	1	1	1								1	1	
Belgium		1	1	1	1	1	1	1	1	1				1	1	1	1	1	1	1	1	1
Brasil									1											1	1	1
Bulgaria	1	1	1	1											1	1	1	1	1	1	1	1
Canada	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chile	1																					
China	1	1				1	1	1		1	1	1	1			1	1	1	1	1	1	1
Croatia							1				1					1						
Cuba					1																	
Cyprus					1	1							1	1	1	1		1	1	1	1	1
Czechoslovakia	1	1	1	1																		
Czech Republic						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Denmark	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Estonia															1	1	1	1	1	1	1	1
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
France	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
GDR	1	1																				
Germany	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Greece	1		1	1			1	1	1	1	1				1	1	1	1	1	1	1	1
Honduras				1																		
Hong Kong, China				1	1		1	1									1	1	1	1	1	1
Hungary	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1
Iceland		1	1	1	1	1	1	1	1	1	1											1
India				1			1	1	1						1	1	1		1		1	1
Indonesia	1			1	1	1	1	1	1	1	1											
Ireland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						
Israel	1	1			1	1	1	1	1	1	1											
Italy	1	1			1	1	1	1	1	1	1						1	1	1	1	1	1
Japan	1	1	1		1	1	1	1	1			1	1	1								
Kazakhstan									1							1	1	1	1	1	1	1
Kenya						1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Korea	1		1	1																		
Latvia																			1			
Lithuania							1	1	1				1	1			1			1	1	
Luxembourg	1	1	1	1	1	1	1	1	1								1	1	1	1	1	1
Macedonia							1	1	1	1	1											1
Malaysia				1		1																
Mocambique		1				1		1			1	1										
Montenegro																				1		1
Namibia					1											1						
Netherlands	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
New Zealand	1		1	1		1								1	1	1		1	1		1	
Norway	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Paraguay		1																				
Poland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Peru	1				1																	
Portugal							1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Romania			1			1		1									1					
Russia - USSR	1	1	1	1		1				1				1		1	1	1	1	1	1	1
Saudi Arabia																1	1	1	1	1	1	1
Serbia																			1	1	1	1
Serbia & Montenegro															1	1	1					
Singapore																						1
Slovak Republic					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Slovenia					1	1	1								1	1	1		1	1	1	1
South Africa		1	1	1	1	1				1				1	1	1	1	1	1	1	1	1
Spain		1	1	1	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1
Sweden	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Switzerland	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thailand	1	1					1	1	1							*	*	*	*	*	*	*
Turkey	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	
United Arab Emirates					1	1	1	1	1	1												
United Kingdom	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Uruguay						1		1	1	1	1											1
United States	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Venezuela		1	1	1	1	1	1	1	1	1	1	1	1	1	1							1
Yugoslavia					1					1	1		1	1								
Zimbabwe	1			1										1								
Totals	34	34	32	35	35	39	41	40	42	37	33	26	27	31	33	39	39	35	39	41	44	40

* Military jumping only in Thailand, no figures available.

Figures from USA for 27 years, 1983 to 2009 inclusive

Appendix 3, Table 15, 2009

YEAR	JUMPERS	JUMPS	FATALITIES				
			Yearly Number	Per 100,000 Jumps	Per 100,000 Jumpers	1 per number Jumps	1 per number Jumpers
1983	101500	unknown	29		28.6		3500
1984	100300	2373000	33	1.2	32.9	71909	3039
1985	102100	2329000	26	1.1	25.5	89577	3927
1986	105600	2246000	30	1.3	28.4	74867	3520
1987	108200	2289000	28	1.2	25.9	81750	3864
1988	110700	2297000	23	1.0	20.8	99870	4813
1989	111880	2352000	36	1.5	32.2	65333	3108
1990	115500	2400000	23	0.9	19.9	104348	5022
1991	121900	2440000	30	1.2	24.6	81333	4063
1992	136528	2600000	27	1.0	19.7	96296	5057
1993	140100	2756870	41	1.5	29.3	67241	3417
1994	140000	2750000	30	1.1	21.4	91667	4667
1995	140000	3000000	28	0.9	20.0	107143	5000
1996	145000	3250000	39	1.2	26.9	83333	3718
1997	145000	3250000	32	1.0	22.1	101563	4531
1998	145000	3250000	47	1.4	32.4	69149	3085
1999	145000	3250000	27	0.8	18.6	120370	5370
2000	145000	3300000	30	0.9	20.7	110000	4833
2001	145000	3000000	35	1.2	24.1	85714	4143
2002	145000	3000000	33	1.1	22.8	90909	4394
2003	145000	3000000	25	0.8	17.2	120000	5800
2004	335000	2520000	21	0.8	7.3	120000	15952
2005	346000	2773000	27	1.1	7.8	102704	12815
2006	372000	2500000	21	0.8	5.7	119048	17714
2007	372000	2500000	18	0.7	4.8	138889	20667
2008	373000	2900000	30	1.0	8.7	96667	12433
2009	373000	2300000	16	0.7	4.3	143750	23313

The USA had more jumps and jumpers in 2009 than any other country.

This table, giving risk factors for the twenty-seven years 1983 – 2009 is therefore of particular interest and value, even though the numbers of jumps and jumpers for 2009 were estimated, rather than exact.

The number of fatalities for 2009 was exact.

The two columns on the right show the risk factors, one fatality per number of jumps, and one fatality per number of jumpers, year on year.

Appendix 4, Table 16, 2009

Country	Number of skydivers in country				Number of jumps made in 2009				Fatalities				Leading causes of fatalities								
	total	students	intern.	experts	total	student	intern	experts	total	stud.	inter.	exp.	cutaway no res.	low cutaway	no act/ low main	freefall collision	fast canopies	other landing	tandem fatalities	other causes	
Brazil	4450	2500	850	1100	65000	10000	25000	30000	2		1	1			1					1	
China	116	28	12	76	26610	1732	1342	23536	0												
Finland	2390	1600	400	400	45485	4685	20000	20000	0												
Germany	10720	2310	2280	6130	266450	24650	41650	200150	4		3	1		1						3	
Hong Kong, China	75	50	18	7	238	4	173	21	0												
Hungary	625	175	181	269	29654	1922	5088	22724	1			1					1				
Iceland	10	0	4	6	191	0	67	124	0												
India	473	149	200	124	13640	3249	4043	6348	1		1									1	
Luxembourg	58	8	37	12	1826	101	1050	675	0												
Netherlands	3276	1200	700	1376	59415	10307	18579	30529	0												
Norway	1468	412	654	402	52117	7008	15036	30073	0												
Saudi Arabia	1200	200	300	700	3000	1600	400	1000	0												
Slovak Republic	741	361	133	247	16244	1686	4796	9762	0												
Spain	1860	no breakdown			196406	no breakdown			2	1		1					1			1	
Sweden	1501	431	481	589	60404	4297	56107 Inter & Expert		0												
United Kingdom	50500	45500	1200	3800	249250	58250	14000	177000	1			1								1	
Uruguay	95	23	14	58	1783	131	287	1365	0												
		Plus 1860 no breakdown				Plus 196406 no breakdown and 56107 Inter & Expert															
TOTAL	17	79558	9424	6250	11438	1087713	71241	137224	374942	11	1	5	5	0	1	1	0	2	0	0	7

Spain – No breakdown into categories of Jumpers and Jumps

Sweden – No breakdown intermediate/expert jumps

This table does NOT include Tandem jumps

Appendix 4, Table 17, 2009

COUNTRY	First jumps done by			AAD saves	% of First Jumps on				% of jumpers used AAD			% jumpers with RSL on reserve		
	static line or IAD/JAD	AFF	tandem		Round main	Square main	Round reserve	Square reserve	Students	Interm.	Experts	Students	Interm.	Experts
Brazil	500	850	0	1		100		100	100	95	85	100	75	1
China (People's Rep.)	761	298	17	0	50	50	50	50	100	100	100	3	2	2
Finland	962	147	1370	1		100		100	100	99	99	100	70	70
Germany	750	1390	380	4	1	99	2	98	100	99	97	99	12	1
Hong Kong, China	3	2	0			100		100	100	100	100	100	100	100
Hungary	43	30	0		1	99	1	99	100	100	50	100	50	20
Iceland	0	0	0	0					100	100	100	100	0	0
India	123	0	0	3		100		100	100	100	90	100	100	100
Luxembourg	12			0		100		100	100	100	100	100	1	0
Netherlands	1048	282	14366	1	4	96			100	95	85	100		
Norway	255	223	2469	0		100		100	100	96	98	100	90	90
Saudi Arabia		40	500	4		100		100	100	100	100			
Slovak Republic	235	28	1	1	1	99	15	85	100	100	100	100	50	30
Spain	180	821	21608	1		100		100	100	100	100	100	50	10
Sweden	231	200	5677	0		100		100	100	100	70	100	n/a	n/a
United Kingdom	17398	1176	37339	1		100	1	99	100	100	95	100	100	70
Uruguay		23	0	0		100		100	100			100		
TOTAL	17	4603	3461	15										

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