The contribution of the liberos to service receiving.
WL 2002 Preliminary Rounds.

The service receiving results from the preliminary rounds of the World league competition 2002 for men show a clear deterioration both in terms of errors and quality.
A comparison with previous data is presented in following table.

Competition	% Excellent	% Error
WL 1999	57.71	4.89
WL 2000	54.17	5.47
WL 2001 Prel.rounds	49.14	6.92
WL 2001 Fin. Round	46.10	5.28
WL 2002 Prel.rounds	49.14	7.43

Receiving characteristics.

Receiving results are often noted on a scale from zero to three where zero corresponds to an error and three to a serve which is handled in such a way that all attack options are open. The intermediate score than corresponds to cases where the ball either does not reach the setter or leaves not open all options for the attack. The FIVB distinguishes the receipt either by excellent, which by lack of clear definition is supposed to correspond to a receipt which leaves all options open, an error and the intermediate cases as continuous. The ranking is based on the percentage excellent, which is defined as the percentage of excellent receipts minus the errors. This quality ranking sometimes shows wide variations between various locations where matches are played and appears hence to be easily influenced on subjective matters. Preference hence in this contribution is given to ranking by percentage errors.

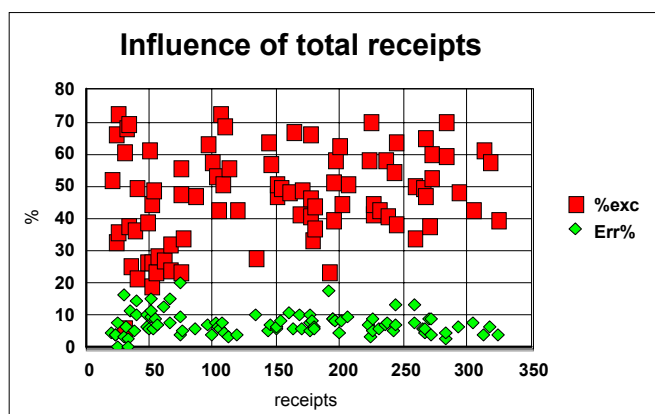## The relation between quality and errors.

The following graph shows an expected relation between percentage excellence and errors. The quality decreases with increasing errors or if the relation works the other way round receiving with poor precision will lead to more errors. The graph is based on those players making more than 20 receipts. Players with more than 10

percent error score poor quality. The average tournament performance turns around 7.4% error and 49.1% excellence.

Influence of the number of service receipts.

It is custom nowadays that service receiving is performed with only three to four players of the team. The distribution over the active receivers is more over not equal and some players do more receiving than others do. One of the questions related to this is whether the receiving load could have an influence on the result. The data for both errors and excellence have been plotted in following graph against the number of service receipts.

Influence of total receipts

From the data one may conclude that there is no such an influence. The error percentage remains about 7 and the quality shows wide fluctuations between 20 and 70 percent for the whole range of receipts. Service receipts may vary from 15 to 20 per team per set .A particular contribution is to be examined for the liberos. Since its introduction some teams use the libero as a receiving expert. Its contribution in receiving is than not only higher than the other players but his results both in errors and quality might be improved. This aspect is being examined in following paragraph.

The contribution of the libero's.

In the following table receiving data are presented for the liberos and the teams without the liberos, this as an attempt to isolate the libero performance.

WL2002	Exc	Err	Cont	Total	%Err	%Exc
LIB	2301	271	1276	3848	7.04	52.75
W. Lib	5297	727	3560	9584	7.59	47.68
TOT	7598	998	4836	13432	7.43	49.14

The libero's take about 30.3% of all receipts. Their average contribution is slightly lower in errors and better in precision as compared to the team performance without the libero's.
The data however show a slight deterioration as compared with last years data, which are presented, in following table.

WL2002	Exc	Err	Cont	Total	%Err	%Exc
LIB	2438	263	1390	4091	53.17	6.43
W. Lib	5060	663	3559	9282	47.37	7.14
TOT	7498	926	4949	13373	49.14	6.92

The above data appear hence the justification that some teams use their libero for improving the receiving results. The spread in performance amongst the liberos is very large and as will be shown in the next section not all teams do have either have a good libero or do not make good use of him.

Libero receiving data.

The following table shows the performance of the libero's. The data ranked according to percentage errors. In view of the time spread between the various matches some team have taken occasion to play with more than one libero. As not all matches have been checked on this aspect some of the data may not be fully correct. It is shown now that there is a very large difference in performance. The error percentage increases from Valido Alexis from 3.13% with 70% excellence to 13.13% error and 34.36. % excellence. It will now also be clear that all the liberos with an error percentage lower than the tournament average will probably have contributed to their team performance but that the libero's with the higher percentages are not improving their corresponding team result. A specific remark has to be made that the tournament has not been played as a round robin competition. There were 4 different sub groups. In one of them three of the four best serve results are grouped with Germany Russia

and the Netherlands. Those teams may have suffered mutually from extreme high service pressure which could explain the higher error percentage and below average performance.

Name	Team	Set	Exc	Err	Cont.	Total.	%Err	%Exc
Valido Alexis	ESP	44	164	7	53	224	3.13	70.09
Casoli Cristian	ITA	43	62	4	34	100	4.00	58.00
Musielak Rafal	POL	49	143	14	168	325	4.31	39.69
Aoyama Shigeru	JPN	45	81	5	24	110	4.55	69.09
Tsumagari Katsutoshi	JPN	45	127	9	41	177	5.08	66.67
Santos SÃ©rgio Dutra	BRA	45	146	13	83	242	5.37	54.96
Valderrama Gustavo	VEN	43	100	8	36	144	5.56	63.89
Mijic Vasa	YUG	46	189	15	63	267	5.62	65.17
Meana Pablo	ARG	45	148	16	101	265	6.04	49.81
Henno Hubert	FRA	47	120	10	34	164	6.10	67.07
Vergnaghi Daniele	ITA	43	87	10	54	151	6.62	50.99
Frangolacci Sebastien	FRA	47	63	8	36	107	7.48	51.40
Teixeira Carlos	POR	47	151	20	88	259	7.72	50.58
Chambers H. Ihosvany	CUB	49	117	19	102	238	7.98	41.18
Chu Hui	CHN	48	168	24	80	272	8.82	52.94
Dimitrakopoulos Christos	GRE	46	126	20	61	207	9.66	51.21
Siebeck Mark	GER	51	91	18	67	176	10.23	41.48
Mitkov Evgueni	RUS	46	95	17	49	161	10.56	48.45
Kooistra Joost	NED	46	123	34	102	259	13.13	34.36

Team Results.

Team	m	s	exc	err	cont	tot	%err	%exc
ESP	12	44	585	40	244	869	4.60	62.72
BRA	12	45	387	41	310	738	5.56	46.88
ARG	12	45	423	52	403	878	5.92	42.26
YUG	12	46	549	48	198	795	6.04	63.02
JPN	12	45	575	56	289	920	6.09	56.41
POL	12	49	380	54	444	878	6.15	37.13
FRA	12	47	524	51	241	816	6.25	57.97
ITA	12	43	422	48	261	731	6.57	51.16
POR	12	47	486	60	334	880	6.82	48.41
VEN	12	43	556	60	241	857	7.00	57.88
GRE	12	46	487	60	275	822	7.30	51.95
CHN	12	48	560	69	247	876	7.88	56.05
CUB	12	49	436	91	357	884	10.29	39.03
RUS	12	46	382	77	281	740	10.41	41.22
GER	12	51	459	98	375	932	10.52	38.73
NED	12	46	387	93	336	816	11.40	36.03
Tot	96	370	7598	998	4836	13432	7.43	49.14

The poor performance of the last four teams in the ranking which were all in the same pool may have been influenced by very strong service pressure.

Comparison of team and libero results.

From the data in the following table it becomes clear that the libero here has contributed positively to the team result in obtaining both lower errors and better precision. Five of those teams will participate in the final round. The % L table is indicating the percentage of receipts the libero has taken from all receipts in the team. The Polish example is indicating that a very high contribution is hence not necessarily an indicator of too high load. On bases of preliminary results it was postulated that a decrease of libero performance could have been due to a

too large participation in the receiving leading to distortions and hence lower efficiency. The Italian contribution is most probably in error, the team having used a second libero, which has escaped from the analyses.

TEAM	REC	LIBERO			TEAM	
		%Err	%Exc	%L	%Err	%Exc
ESP	224	3.13	70.09	25.8	4.60	62.72
ITA	100	4.00	58.00	13.7	6.57	51.16
POL	325	4.31	39.69	37.0	6.15	37.13
JPN	287	4.88	67.60	31.2	6.09	56.41
BRA	242	5.37	54.96	32.8	5.56	46.88
VEN	144	5.56	63.89	16.8	7.00	57.88
YUG	267	5.62	65.17	33.6	6.04	63.02

The results for Argentine, France and Portugal are neutral. The performance of the liberos corresponds about to the team performance. China Germany and Russia score near the same results for the libero and the team, the absolute values however are very high for the errors and both libero and team results are far above the average performance. The only two teams where the libero clearly does not contribute to a better team result are Greece and the Netherlands.

GRE	207	9.66	51.21	25.2	7.30	51.95
NED	259	13.13	34.36	31.7	11.40	36.03

Detailed team-receiving results.

Name	Team	Nb. Set	Excellent	Faults	Cont.	Total Atts.	Eff. %	Err%
Elgueta Jorge	ARG	45	138	12	117	267	47.19	4.49
Meana Pablo	ARG	45	148	16	101	265	49.81	6.04
Giani Gaston	ARG	45	79	11	90	180	37.78	6.11
Conte Hugo	ARG	45	27	5	35	67	32.84	7.46
Bidegain Jeronimo	ARG	45	18	5	25	48	27.08	10.42
Torcello Maximo	ARG	45	7	1	10	18	33.33	5.56
Maly Leandro	ARG	45	1		11	12	8.33	0.00
Milinkovic Marcos	ARG	45	2	1	2	5	20.00	20.00
Porporatto Gustavo	ARG	45	1		4	5	20.00	0.00
Peralta Pablo	ARG	45		1	3	4	25.00	25.00
Spajic Alejandro	ARG	45	2		2	4	0.00	0.00
Efron Nicolas	ARG	45			2	2	0.00	0.00
Ferraro Hernan	ARG	45			1	1	0.00	0.00

Name	Team	Nb. Set	Excellent	Faults	Cont.	Total Atts.	Eff. %	Err%
Santos Sérgio Dutra	BRA	45	146	13	83	242	54.96	5.37
Bitencourt Nalbert	BRA	45	113	12	101	226	44.69	5.31
Godoy Filho Gilberto	BRA	45	56	5	58	119	42.86	4.20
Amaral Dante	BRA	45	46	5	35	86	47.67	5.81
Gavio Giovane	BRA	45	16	2	20	38	36.84	5.26
Endres Gustavo	BRA	45	5		6	11	45.45	0.00
Randow Henrique	BRA	45	3	2	3	8	12.50	25.00
Lima Mauricio	BRA	45			3	3	0.00	0.00
Rodrigues Anderson	BRA	45	1	2		3	33.33	66.67
Garcia Ricardo	BRA	45			1	1	0.00	0.00
Santana Rodrigo	BRA	45	1			1	100.00	0.00
Shi Hairong	CHN	48	204	20	94	318	57.86	6.29
Chu Hui	CHN	48	168	24	80	272	52.94	8.82
Shen Qiong	CHN	48	155	17	63	235	58.72	7.23
Sui Shengsheng	CHN	48	17	1	6	24	66.67	4.17
Lu Fei	CHN	48	12	3		15	60.00	20.00
Zheng Liang	CHN	48	3	1	3	7	28.57	14.29
He Jiong	CHN	48		3	1	4	-75.00	75.00
Wang Haichuan	CHN	48	1			1	100	0.00
Cala Yosleider	CUB	49	128	33	83	244	38.93	13.52
Chambers H. Ihosvany	CUB	49	117	19	102	238	41.18	7.98
Portuando Yasser	CUB	49	96	18	80	194	40.21	9.28
Bell Henry	CUB	49	52	14	68	134	28.36	10.45
Brito Pons Javier	CUB	49	28	5	18	51	45.10	9.80
Cruz R. Jesus	CUB	49	7		3	10	70.00	0.00
Dominico Speek	CUB	49	4	1		5	60.00	20.00
Pimienta Allen Pavel	CUB	49	3		1	4	75.00	0.00
Aldazabal M. Tomás	CUB	49		1	1	2	-0.00	50.00
Roca Borrero Alain	CUB	49	1		1	2	50.00	0.00
De La Fuente Enrique	ESP	44	207	8	68	283	70.32	2.83
Valido Alexis	ESP	44	164	7	53	224	70.09	3.13
Suela Luis Pedro	ESP	44	147	16	60	223	58.74	7.17
Vega Juan Carlos	ESP	44	39	3	33	75	48.00	4.00
Casilla Jose Antonio	ESP	44	13	4	18	35	25.71	11.43
Molto Jose Luis	ESP	44	5		5	10	50.00	0.00
Carreno Carlos Luis	ESP	44	5		2	7	71.43	0.00
Salvador Juan Jose	ESP	44	3	1	3	7	28.57	14.29
Falasca Guillermo	ESP	44	2	1	1	4	25.00	25.00
Gens Jordi	ESP	44			1	1	0.00	0.00

Name	Team	Nb. Set	Excellent	Faults	Cont.	Total Atts.	Eff. %	Err%
Antiga Stephane	FRA	47	183	13	88	284	59.86	4.58
Henno Hubert	FRA	47	120	10	34	164	67.07	6.10
Frangolacci Sebastien	FRA	47	63	8	36	107	51.40	7.48
Granvorka Frantz	FRA	47	63	8	32	103	53.40	7.77
Barca-Cysique	FRA	47	29	3	21	53	49.06	5.66
Marquet Luc	FRA	47	34	3	13	50	62.00	6.00
Herpe Renaud	FRA	47	24	4	12	40	50.00	10.00
Kieffer Olivier	FRA	47	2	1	2	5	20.00	20.00
Montmeat Vincent	FRA	47	3		1	4	75.00	0.00
Daquin Dominique	FRA	47	2			2	100.00	0.00
Opota Onya	FRA	47	1		1	2	50.00	0.00
Capet Laurent	FRA	47		1		1	100.00	100.00
Monneraye Jean	FRA	47			1	1	0.00	0.00
Andrae BjÃ¶rn	GER	51	155	24	126	305	42.95	7.87
Lange Vincent	GER	51	114	20	92	226	41.59	8.85
Pampel Christian	GER	51	80	34	77	191	24.08	17.80
Siebeck Mark	GER	51	91	18	67	176	41.48	10.23
Glinker Sven	GER	51	12	1	8	21	52.38	4.76
HÃ¼bner Stefan	GER	51	4		2	6	66.67	0.00
Walter Norbert	GER	51	2		2	4	50.00	0.00
Wiederschein Ilja	GER	51	1		1	2	50.00	0.00
Liefke Marco	GER	51		1		1	100.00	100.00
Baev Tontor-Zlatkov	GRE	46	175	11	86	272	60.29	4.04
Dimitrakopoulos	GRE	46	126	20	61	207	51.21	9.66
Gkiourdas Marios	GRE	46	118	18	58	194	51.55	9.28
Kyriazis Chrysanthos	GRE	46	52	7	46	105	42.86	6.67
Lappas Ilias	GRE	46	9	1	14	24	33.33	4.17
Pantaleon Sotirios	GRE	46	3	2	3	8	12.50	25.00
Kournetas Vasileios	GRE	46	1	1	2	4	0.00	25.00
Chatziantoniou	GRE	46	1		2	3	33.33	0.00
Barmpoudis	GRE	46	2		1	3	66.67	0.00
Bozidis Theodoros	GRE	46			2	2	0.00	0.00
Zlatanov Hristo	ITA	43	96	14	66	176	46.59	7.95
Vergnaghi Daniele	ITA	43	87	10	54	151	50.99	6.62
Casoli Cristian	ITA	43	62	4	34	100	58.00	4.00
Papi Samuele	ITA	43	68	7	21	96	63.54	7.29
Cernic Matej	ITA	43	49	7	19	75	56.00	9.33
Giani Andrea	ITA	43	20	4	32	56	28.57	7.14
Corsano Mirko	ITA	43	13		21	34	38.24	0.00
Mastrangelo Luigi	ITA	43	7		4	11	63.64	0.00
Sartoretti Andrea	ITA	43	8		2	10	80.00	0.00
Fei Alessandro	ITA	43	7	1	1	9	66.67	11.11
Gravina Pasquale	ITA	43	4		3	7	57.14	0.00
Tencati Luca	ITA	43			3	3	0.00	0.00
Vermiglio Valerio	ITA	43		1	1	2	-50.00	50.00
Molteni Marco	ITA	43	1			1		0.00

Name	Team	Nb. Set	Excellent	Faults	Cont.	Total Atts.	Eff. %	Err%
Kato Yoichi	JPN	45	207	13	93	313	61.98	4.15
Morishige Ryu	JPN	45	108	17	77	202	45.05	8.42
Tsumagari Katsutoshi	JPN	45	127	9	41	177	66.67	5.08
Aoyama Shigeru	JPN	45	81	5	24	110	69.09	4.55
Asakura Isamu	JPN	45	18	5	32	55	23.64	9.09
Chiba Shinya	JPN	45	24	2	6	32	68.75	6.25
Yamamoto Takahiro	JPN	45	5	4	9	18	5.56	22.22
Kawaura Hiroaki	JPN	45	2	1	1	4	25.00	25.00
Yamamura Kota	JPN	45	2	Â	1	3	66.67	0.00
Usami Daisuke	JPN	45	Â	Â	2	2	0.00	0.00
Matsuta Yusuke	JPN	45	Â	Â	1	1	0.00	0.00
Yamaguchi Makoto	JPN	45	Â	Â	1	1	0.00	0.00
Ito Nobuhiro	JPN	45	Â	Â	1	1	0.00	0.00
Masumura Masanao	JPN	45	1	Â	Â	1	100.00	0.00
Nummerdor Reinder	NED	46	128	24	119	271	38.38	8.86
Kooistra Joost	NED	46	123	34	102	259	34.36	13.13
GÃ¶rtzen Guido	NED	46	88	17	64	169	42.01	10.06
Horstink Robert	NED	46	22	8	22	52	26.92	15.38
van der Hoek Joost	NED	46	15	6	20	41	21.95	14.63
Paulides Joppe	NED	46	5	2	4	11	27.27	18.18
Schuil Richard	NED	46	2		3	5	40.00	0.00
Maan Joram	NED	46	2		1	3	66.67	0.00
Olsthoorn Sander	NED	46	1	1		2	0.00	50.00
Freriks Nico	NED	46		1	1	2	-50.00	50.00
van Gendt Dirk-Jan	NED	46	1			1	100.00	0.00
Musielak Rafal	POL	49	143	14	168	325	39.69	4.31
Murek Dawid	POL	49	113	14	104	231	42.86	6.06
Swiderski Sebastian	POL	49	75	15	89	179	33.52	8.38
Gruszka Piotr	POL	49	30	4	42	76	34.21	5.26
Siezieniewski Pawel	POL	49	16	6	30	52	19.23	11.54
Szczerbaniuk Robert	POL	49	1		5	6	16.67	0.00
Nowak Marcin	POL	49	2	1	2	5	20.00	20.00
Zagumny Pawel	POL	49			2	2	0.00	0.00
Stancelewski Jaroslaw	POL	49			1	1	0.00	0.00
Golas Arkadiusz	POL	49			1	1	0.00	0.00
Silva Manuel	POR	47	163	20	111	294	48.64	6.80
Teixeira Carlos	POR	47	151	20	88	259	50.58	7.72
Reis Roberto	POR	47	92	12	76	180	44.44	6.67
Alves Jorge	POR	47	67	4	41	112	56.25	3.57
Peixoto Eurico	POR	47	11	2	12	25	36.00	8.00
JosÃ© Joao	POR	47	1	Â	2	3	33.33	0.00
Pereira Ubirajara	POR	47	1	Â	2	3	33.33	0.00
Gaspar Hugo	POR	47	Â	1	1	2	-50.00	50.00
Milhazes FÃ¡bio	POR	47	Â	Â	1	1	0.00	0.00
Pinheiro Nuno	POR	47	Â	1	Â	1	100.00	100.00

Name	Team	Nb. Set	Excellent	Faults	Cont.	Total Atts.	Eff. %	Err%
Mitkov Evgueni	RUS	46	95	17	49	161	48.45	10.56
Tetioukhine Serguei	RUS	46	90	13	51	154	50.00	8.44
Abramov Pavel	RUS	46	80	9	61	150	47.33	6.00
Sokolov Alexander	RUS	46	33	15	27	75	24.00	20.00
Khtei Taras	RUS	46	26	10	30	66	24.24	15.15
Choulepov Igor	RUS	46	25	8	29	62	27.42	12.90
Kossarev Alexandre	RUS	46	22	3	23	48	39.58	6.25
Koulechov Alexei	RUS	46	6	1	3	10	50.00	10.00
Egortchev Andrei	RUS	46	4	Â	2	6	66.67	0.00
Olikhver Rouslan	RUS	46	1	Â	2	3	33.33	0.00
Ushakov Konstantin	RUS	46	Â	Â	2	2	0.00	0.00
Khamouttskikh Vadim	RUS	46	Â	1	1	2	-50.00	50.00
Guerassimov Alexandre	RUS	46	Â	Â	1	1	0.00	0.00
Rojas Andy	VEN	43	132	17	47	196	58.67	8.67
Reyes Jorge	VEN	43	94	10	66	170	49.41	5.88
Ereu Thomas	VEN	43	94	10	42	146	57.53	6.85
Valderrama Gustavo	VEN	43	100	8	36	144	63.89	5.56
Luna Carlos	VEN	43	83	6	17	106	72.64	5.66
Sarti Ronald	VEN	43	7	5	19	31	6.45	16.13
Mendez Ronald	VEN	43	19	Â	7	26	73.08	0.00
Manzanillo Andres	VEN	43	15	1	1	17	82.35	5.88
Silva Jorge	VEN	43	9	Â	4	13	69.23	0.00
Gomez Ernardo	VEN	43	2	1	Â	3	33.33	33.33
Diaz Luis	VEN	43	1	Â	1	2	50.00	0.00
Blanco Juan Carlos	VEN	43	Â	1	Â	1	100.00	100.00
Guzman Hector	VEN	43	Â	Â	1	1	0.00	0.00
Cedeno Fredy	VEN	43	Â	1	Â	1	100.00	100.00
Mijic Vasa	YUG	46	189	15	63	267	65.17	5.62
Vujevic Goran	YUG	46	173	17	54	244	63.93	6.97
Boskan Slobodan	YUG	46	134	9	56	199	62.81	4.52
Janic Bojan	YUG	46	24	1	8	33	69.70	3.03
Grbic Vladimir	YUG	46	20	1	10	31	61.29	3.23
Grbic Nikola	YUG	46	2	1	3	6	16.67	16.67
Mester Dula	YUG	46	3	Â	3	6	50.00	0.00
Miljkovic Ivan	YUG	46	1	2	Â	3	-33.33	66.67
Vusurovic Igor	YUG	46	2	1	Â	3	33.33	33.33
Maric Goran	YUG	46	Â	Â	1	1	0.00	0.00
Geric Andrija	YUG	46	Â	1	Â	1	100.00	100.00
Jokanovic Rajko	YUG	46	1	Â	Â	1	100.00	0.00

In many teams the libero is the leading player in service reception. As indicated in this article as long as the libero performances are good this is a healthy principle. In similar way most teams do show a good distribution of resources, by which is meant that the best stoppers take maximum part of the receipts. Only in this way can the overall amount of errors be reduced. There are some poor examples for Cuba and Russia where the receipt leader has not lowest error percentage and where other players do score clearly lower error. Their contribution in overall receiving is to be increased to lower the overall amount of errors.