European Society of Biomechanics

Report Profile Data of ESB Members

Zürich – 10 June 2009

The ESB Council considers adequate to perform a survey to evaluate the satisfaction level of all our members. But, previously, it is necessary to know more exactly the profile of all our members in order to develop a survey adequate for them.

The profile data (see Appendix 1) was encouraged to be filled out for all the ESB members at 15th of May. However, only 313 of 581 members (53%) have done it.

The characteristics of the members that have filled out the survey, comparing them with the available data corresponding to all the members is shown in Table 1. In this sense, the only data that we can compare is the status of our members. Therefore, we can validate our profile data with respect to the status. In fact, we can see how the distribution of all the members in function of the status and the distribution of the people that filled out the Profile Data, is very similar. Therefore, we can conclude that these data are representative of all our members with respect to the status of the members.

Table 1 *Characteristics of the members that have filled out the Profile Data (PD).*

Survey Values	PD	% PD.	ESB	% ESB
1. Status	313		581	
Active	240	76,7%	379	65,3%
Students	64	20,4%	169	29,1%
Senior	6	1,9%	21	3,6%
Honorary	1	0,3%	8	1,2%
Corporate	2	0,6%	3	0,5%
2. Age	42,6±12,3		--	
3. Organization				
Higher Education	192	61,3%		
Research Institute	65	20,8%		
Hospital or Medical School	36	11,5%		
Industrial or commercial	10	3,2%		
Governmental :	2	0,6%		
Other	8	2,6%		
4. Main Role				
Research and/or development	151	48,2%		
R&D and teaching equally	113	36,1%		
Management/Administration	13	4,2%		
Teaching	12	3,8%		
Clinical	8	2,6%		
Advisory/Consultancy	7	2,2%		
Engineer	5	1,6%		
5. Position				
Head of Department/Full Professor/Senior Management	89	28,4%		

Senior Researcher/Associate Professor/Middle Management	80	25,6%		
Researcher/Assistant Professor	52	16,6%		
Post-doc/Staff Member	46	14,7%		
Graduate Student	38	12,1%		
6. Academic Degree				
PhD	236	75,4%		
MS	31	9,9%		
Other	19	6,1%		
MD	15	4,8%		
BS	3	1,0%		
7. Main Degree				
Biologist	6	1,9%		
Chemist	1	0,3%		
Clinician, Cardiovascular	1	0,3 %		
Clinician, Orthopaedics	11	3,5%		
Clinician, Other	6	1,9%		
Engineer, Biomedical	67	21,4%		
Engineer, Civil	13	4,2%		
Engineer, Electrical	9	2,9%		
Engineer, Imaging	1	0,3%		
Engineer, Mechanical	127	40,6%		
Engineer, Other	14	4,5%		
Other	29	9,3%		
Physicist	20	6,4%		
Veterinarist	3	1,0%		

The age of the members that have filled out the survey is 42,6±12,3 with the distribution shown in Figure 1.

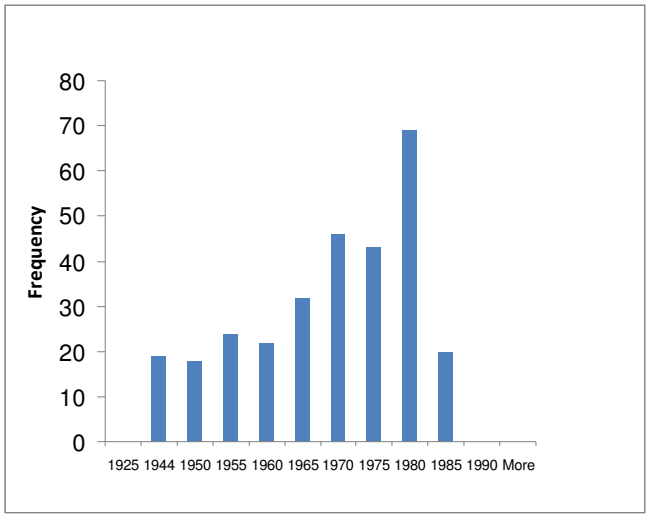

Figure 1. Age distribution of ESB members (all member types).

Our members come from different kind of organizations (see Figure 2), in fact, they mainly belong to Higher Education and Research Institutes in a ratio higher than 80%.

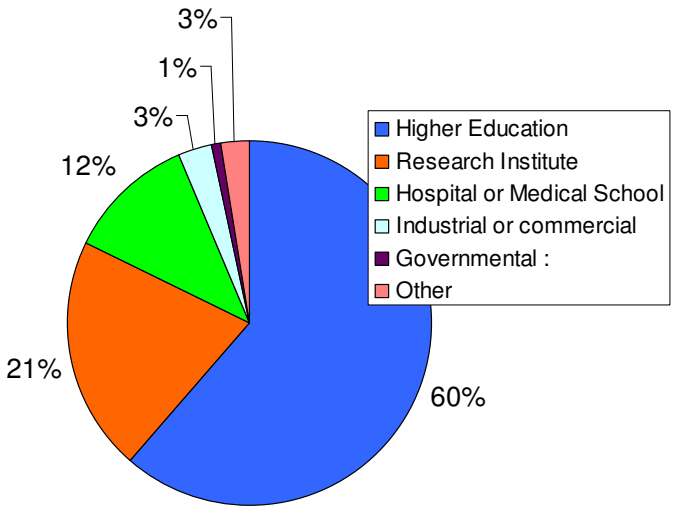

Figure 2. Distribution of the types of organizations in which ESB members are involved.

With respect to the main role of our members, we can conclude that our members perform a main activity of research (Figure 3).

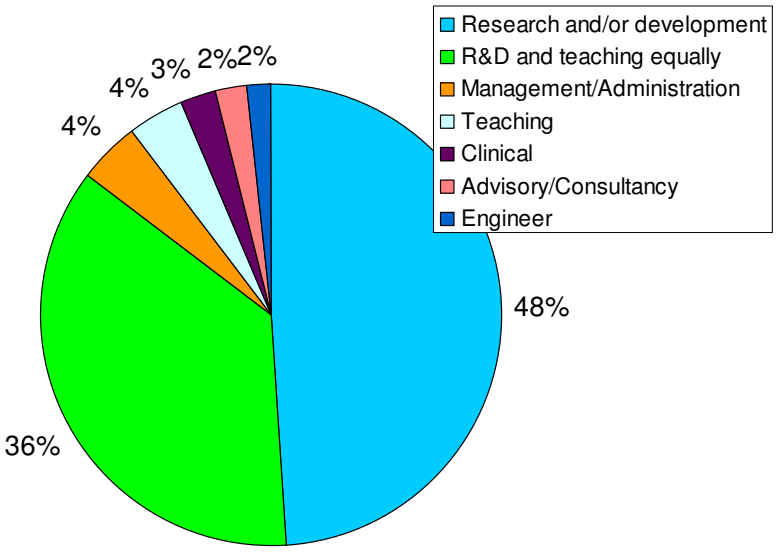

Figure 3. Main activities in which ESB members are involved.

In fact, if we analyze the distribution of our members taking into account the institution and the activity we can see again the more important activities (see Table 2): R&D and teaching equally and Research and/or development, that is mainly developed in Higher Education, Research Institute and Hospitals.

	Advisory/Consultancy	Clinical	Engineer	Management/Administration	R&D and teaching equally	Research and/or development	Teaching
Governmental	0	0	0	1	1	0	0
Higher Education	1	0	2	4	92	80	12
Hospital or Medical School	2	6	0	0	7	20	0
Industrial or Commercial	2	0	1	2	0	5	0
Other	1	2	0	1	2	1	0
Research Institute	1	0	2	5	11	45	0
	7	8	5	13	113	151	12

Table 2. Distribution of members that work in a specific activity and its relation with the organization where this activity is performed.

The position that occupies our members in their organizations is quite uniform, therefore, we have members with a uniform distribution (Fig. 4). Most of our members are PhD, in fact more than 75%, as we can see in Table 1.

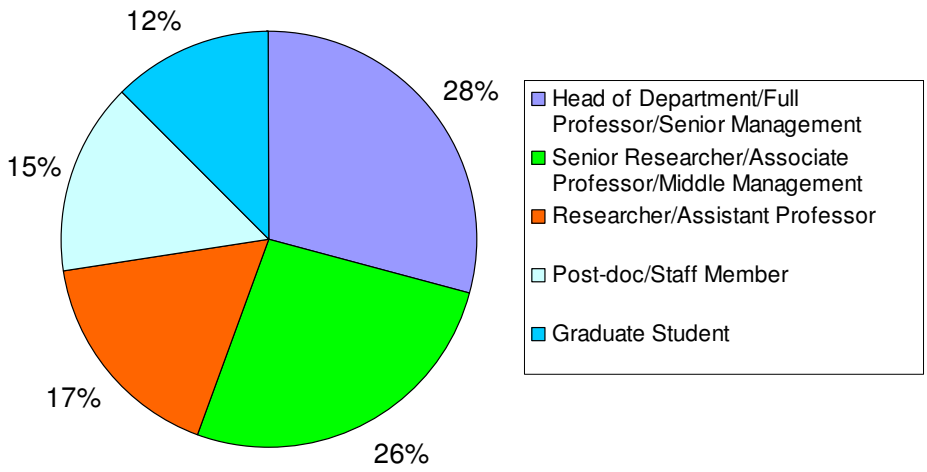

Figure 4. Distribution of positions occupied by ESB members.

With respect to the main professional career of our members a more reduced classification has been developed, distinguishing into Clinicians, 3 types of engineers (Biomedical, Mechanical and others) and the rest of degrees. With this classification in mind, we can

see in the figure 5 that our members are mainly engineers (more than 73%). The ratio of clinicians is very small only the 6%, being 11 Orthopaedics, only 1 Cardiovascular and 6 more in other specialities.

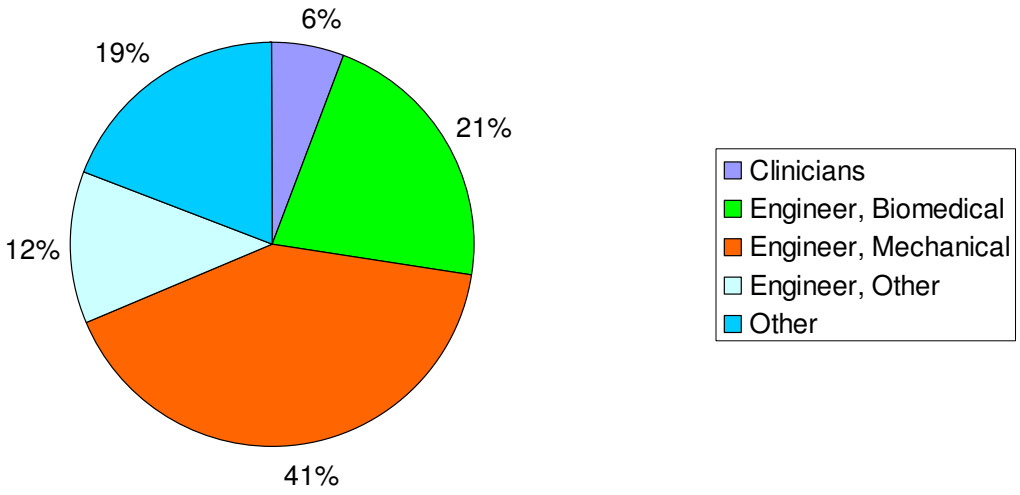

Figure 5. Main degree of the ESB Members.

The research areas in which our members are currently working are shown in figure 6. Clearly the hottest research topics are Hard Tissue Mechanics, Soft Tissue Mechanics and Joint Mechanics. At the same time the 5 topics with less interest are: Botany, Zoology & Animal Biomechanics, Pulmonary/Respiratory/Lung/Airway Dynamics, Molecular Mechanics and Anthropometry/Body Segment Inertial Properties.

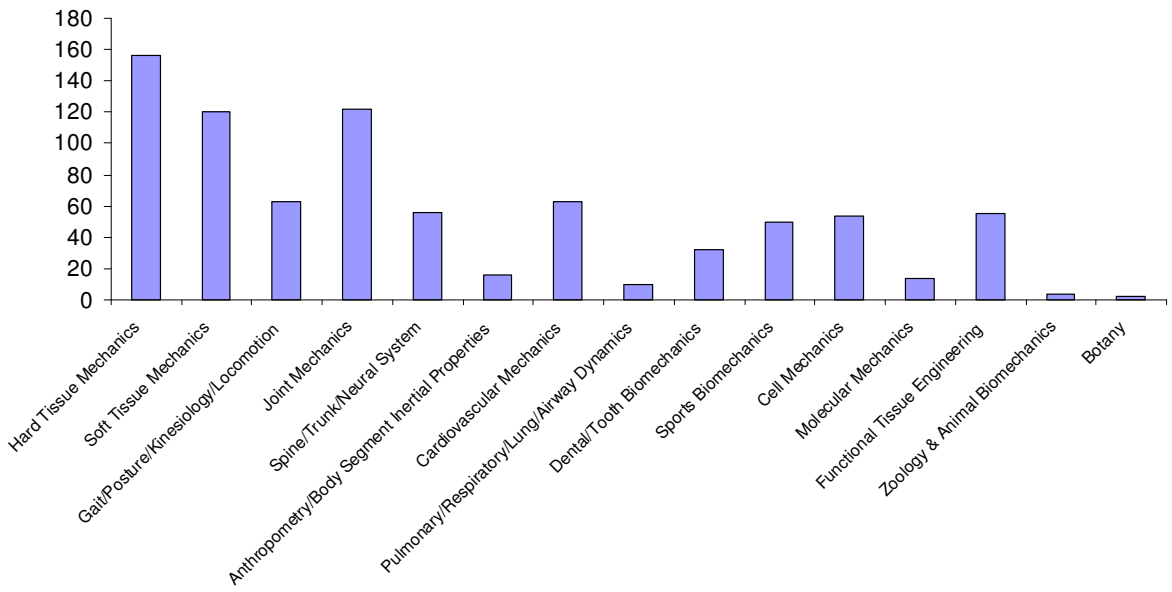

Figure 6. Distribution of the main research topics in which ESB members are working.

It is really interesting to study the interaction among different research topics, to evaluate this effect, we show the correlation among these research areas (see Table 3). When the correlation is significative at a level of 0.01/0.05 it is indicated with the following symbols **/* respectively.

Correlaciones

		Hard Tissue Mechanics	Soft Tissue Mechanics	Gait/ Posture/ Kinesiology/ Locomotion	Joint Mechanics	Spine/ Trunk/Neural System	Cardiovascular Mechanics	Dental/Tooth Biomechanics	Sports Biomechanics	Cell Mechanics	Functional Tissue Engineering
Hard Tissue Mechanics	Correlación de Pearson	1	,013	-,166**	,055	,052	-,246**	,213**	-,086	-,083	-,024
	Sig. (bilateral)		,817	,003	,331	,363	,000	,000	,130	,142	,676
	N	312	312	311	311	311	311	311	311	311	311
Soft Tissue Mechanics	Correlación de Pearson	,013	1	-,099	,020	,080	,131*	-,026	,017	,164**	,104
	Sig. (bilateral)	,817		,081	,727	,160	,021	,645	,769	,004	,066
	N	312	313	312	312	312	312	312	312	312	312
Gait/Posture/ Kinesiology/Locomotion	Correlación de Pearson	-,166**	-,099	1	,284**	,035	-,253**	-,170**	,411**	-,188**	-,128*
	Sig. (bilateral)	,003	,081		,000	,536	,000	,003	,000	,001	,024
	N	311	312	312	312	312	312	312	312	312	312
Joint Mechanics	Correlación de Pearson	,055	,020	,284**	1	,104	-,305**	,011	,259**	-,210**	-,060
	Sig. (bilateral)	,331	,727	,000		,065	,000	,853	,000	,000	,287
	N	311	312	312	312	312	312	312	312	312	312
Spine/Trunk/Neural System	Correlación de Pearson	,052	,080	,035	,104	1	-,152**	-,020	,023	-,104	,025
	Sig. (bilateral)	,363	,160	,536	,065		,007	,719	,681	,068	,663
	N	311	312	312	312	312	312	312	312	312	312
Cardiovascular Mechanics	Correlación de Pearson	-,246**	,131*	-,253**	-,305**	-,152**	1	-,038	-,133*	,213**	,061
	Sig. (bilateral)	,000	,021	,000	,000	,007		,498	,019	,000	,286
	N	311	312	312	312	312	312	312	312	312	312
Dental/Tooth Biomechanics	Correlación de Pearson	,213**	-,026	-,170**	,011	-,020	-,038	1	-,061	-,099	,038
	Sig. (bilateral)	,000	,645	,003	,853	,719	,498		,280	,081	,507
	N	311	312	312	312	312	312	312	312	312	312
Sports Biomechanics	Correlación de Pearson	-,086	,017	,411**	,259**	,023	-,133*	-,061	1	-,177**	-,133*
	Sig. (bilateral)	,130	,769	,000	,000	,681	,019	,280		,002	,018
	N	311	312	312	312	312	312	312	312	312	312
Cell Mechanics	Correlación de Pearson	-,083	,164**	-,188**	-,210**	-,104	,213**	-,099	-,177**	1	,322**
	Sig. (bilateral)	,142	,004	,001	,000	,068	,000	,081	,002		,000
	N	311	312	312	312	312	312	312	312	312	312
Functional Tissue Engineering	Correlación de Pearson	-,024	,104	-,128*	-,060	,025	,061	,038	-,133*	,322**	1
	Sig. (bilateral)	,676	,066	,024	,287	,663	,286	,507	,018	,000	
	N	311	312	312	312	312	312	312	312	312	312

**. La correlación es significativa al nivel 0,01 (bilateral).

*. La correlación es significante al nivel 0,05 (bilateral).

Table 3. Correlations between the different research topics in which ESB members are involved.

Following the main positive correlations between research topics, we could group the main research topics in those defined in the Table 4.

Main research topics			Ratio above the total
Hard Tissue Mechanics (19.1%)		Dental/Tooth Biomechanics (3.9%)	23%
Soft Tissue Mechanics (14.7%)	Cardiovascular Mechanics (7.7%)	Cell Mechanics (6.6%)	29%
Gait/Posture/Kinesiology/Locomotion (7.7%)	Joint Mechanics (14.9%)	Sports Biomechanics (6.1%)	28.7%
Spine/Trunk/Neural System (6.8%)			6.8%
Cell Mechanics (6.6%)	Functional Tissue Engineering (6.7)		13.3%

Table 4. Main groups of research topics, indicating the ratio of positive answers with respect to the total.