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ESPS Peer-review Report
Name of Journal: World Journal of Orthopedics
ESPS Manuscript NO: 8521
Title: Bio-tribology of artificial hip joints
Reviewer code: 00740820
Science editor: Huan-Huan Zhai
Date sent for review: 2013-12-29 18:14
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CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
[ ] Grade A (Excellent)	[ ] Grade A: Priority Publishing	Google Search:	[ ] Accept
[ ] Grade B (Very good)	[ ] Grade B: minor language polishing	[ ] Existed	[ ] High priority for publication
[Y] Grade C (Good)	[Y] Grade C: a great deal of language polishing	[ ] No records	[ ]Rejection
[ ] Grade D (Fair)	[ ] Grade D: rejected	BPG Search:	[ ] Minor revision
[ ] Grade E (Poor)		[ ] Existed	[Y] Major revision
		[ ] No records	

COMMENTS TO AUTHORS
interesting article. but too long and too specialized, fine for the engineers not for orthopaedists. therefore not fully intelligible to the orthopedic specialist. Article must be reduced in length and must, if possible, made ??more understandable to readers of a journal of orthopedics and not of engineers.

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ESPS Peer-review Report
Name of Journal: World Journal of Orthopedics
ESPS Manuscript NO: 8521
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CLASSIFICATION	LANGUAGE EVALUATION	RECOMMENDATION	CONCLUSION
[ ] Grade A (Excellent)	[ ] Grade A: Priority Publishing	Google Search:	[ ] Accept
[ ] Grade B (Very good)	[ ] Grade B: minor language polishing	[ ] Existed	[ ] High priority for publication
[Y] Grade C (Good)	[Y] Grade C: a great deal of language polishing	[ ] No records	[ ]Rejection
[ ] Grade D (Fair)	[ ] Grade D: rejected	BPG Search:	[Y] Minor revision
[ ] Grade E (Poor)		[ ] Existed	[ ] Major revision
		[ ] No records	

COMMENTS TO AUTHORS

General: 1. This paper is a useful addition to the study of artificial hip joints. It is very important to inform researchers and surgeons who are not familiar with biotribology of the findings of this field. I think it is publishable subject to the following revisions. 2. I am not sure whether it is necessary to present so much basic tribological knowledge that has been well documented in text books in a modern review paper. I think Section 3 can be significantly reduced to only presenting the most relevant and necessary content, unless these are required by the editor. Maybe it is worth of referring to 'Jin Z; Stone MH; Ingham E; Fisher J (v) Biotribology – Mini-symposium: Biomechanics for the FRCS exam. Current Orthopaedics. 2006, 20: 32 – 40' of how to represent the basic tribology knowledge? 3. Some latest and important development in the biotribology of artificial hip joints was not included in this paper. This can be found from the following specific comments. Specific: 4. Page 6, second paragraph, 'The ideal interacting surfaces of the cup and head are portions of spheres.' In terms of tribological performance, I would believe that the ideal surfaces of the cup and head should be aspherical. This has been well presented in the Introduction of 'Meng QE, Liu F, Fisher J, Jin ZM. Transient elastohydrodynamic lubrication analysis of a novel metal-on-metal hip prosthesis with a nonspherical femoral bearing surface. Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine. 2011, 225 (H1): 25 – 37.' 5. Page 6, Figure 3 a. 'Roundness' is not indicated. 6. Page 7, the last paragraph. 'The sign in Equation (2) should be plus …' I guess you mean Equation (3) here? 7. Page 16, content of Figure 13. Is the information of the journal bearing really relevant? 8. Page 17, Equations (17) and (18). I think references should be given even if they are well known for tribologists. 9. Page 17, the last paragraph. '… while elastic

deformation is estimated by means of Finite Element or the fast Fourier-transform based Method'. As far as I know, in the ball-in-socket model, the elastic deformation is calculated either by a Fast Fourier Transform method or a multi-level multi-integration method. For both methods, the elastic deformation coefficients are estimated by a Finite Element based method. 10. Page 25, the first paragraph. 'Table 3 shows similar COFs for synovial fluid and 100% bovine serum, demonstrating the pertinence of using the latter in friction tests.' Please check, 25% bovine serum is more widely used in simulator study. 11. Page 25, Table 3. Please add the corresponding references in the table. 12. Page 26, the second paragraph. 'A summary of the main theoretical results obtained by both empirical formulas (e.g. Equation (17)) and advanced EHL models is provided in Table 5. … the correspondent average hmin (in the brackets),…'. In Table 5, it is not clear which values were obtained from empirical formulas and which were from EHL models. Moreover, the average hmin which is supposed to be in brackets cannot be found. Furthermore, the conditions under which the values of hmin in Table 5 were calculated are not clear. 13. Page 27, the last paragraph. Regarding the important role of geometry. Except the effect of radial clearance and diameter, it is important to discuss here that the application of non-spherical bearing surface can significantly improve the film thickness. Please refer to the following papers for details. Meng QE, Gao LM, Liu F, Yang PR, Fisher J, Jin ZM. Contact mechanics and elastohydrodynamic lubrication in a novel metal-on-metal hip implant with an aspherical bearing surface. Journal of Biomechanics. 2010, 43 (5): 849 ? 857. Meng QE, Liu F, Fisher J, Jin ZM. Transient elastohydrodynamic lubrication analysis of a novel metal-on-metal hip prosthesis with a nonspherical femoral bearing surface. Proceedings of the Institution of Mechanical En