

从来如此，便对吗？

-----鲁迅《狂人日记》

从来如此的 QWERTY 键盘，便对吗？

X-BOWS 创始人王希国，在做键盘之前是一名医学影像科医生，他说做键盘也是为了预防一种疾病，从开始设计 X-BOWS 人体工学键盘到这次 ZF 预售活动，历时四年余。

能不能预防疾病这事儿肯定需要大量实践和时间才能验证，但是这位医生设计的键盘看着就顺手，作为一种工具，顺手才是本分，顺手的肯定比不顺手的好用不伤身。

X-Bows重新设计了人机工学键盘的按键位置，
按键沿手指自然弯曲和伸展方向排列，
用户能以最轻松和舒展的动作完成键盘操作，减少手指、手腕的摆动幅度和频率，
避免腕管压力过度增高，从而减轻使用者的疲劳和避免损伤，预防RSI。
并显著降低误击率，提高输入效率。



王医生认为：键盘操作导致的腕管综合征 (CTS)，是一种未被纳入《职业病目录》的职业病。

2015 年末王医生偶然看到了一篇医学论文，了解到国外对键盘操与 RSI（重复性应力伤害，是一类疾病的统称）、腕管综合征（RSI 的其中一种疾病）相关性的研究成果。其中引用了美国劳工部 1999 年一份报告的数据，美国有 800 万 RSI 患者，其中 20%也就是 160 万人患者缘于长时间键盘操作。90 年代末期至二十一世纪初，国外医学界更是出现了大量的关于键盘与 RSI 研究文献。

EDITOR'S CHOICE

The Effect of Carpal Tunnel Release on Typing Performance

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ORIGINAL CONTRIBUTION

Computer Use and Carpal Tunnel Syndrome: A 1-Year Follow-up Study

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Context: Computer use is increasingly common among many working populations, and ergonomic issues about possible adverse effects of computer use, such as carpal tunnel syndrome (CTS).

Objectives: To evaluate the prevalence and incidence of possible CTS and to evaluate the correlation of use of mouse devices and exposure to the risk of possible CTS.

Design and Setting: A 1-year follow-up study with questionnaires conducted in 2000 and 2001 at 1500 workplaces in Denmark, followed on each of the 2 occasions by a clinical interview or symptom distribution and frequency.

Participants: The questionnaire was sent to 3480 members of a trade union, with an initial response rate of 77% (n=2684), and 62% (n=5050) at follow-up.

Main Outcome Measures: At baseline, there were 3 outcome measures: tingling/numbness in the right hand since a week or more as reported in the questionnaire; tingling, numbness, and pain in the median nerve in the right hand confirmed by clinical interview; and tingling, numbness, and pain in the median nerve in the right hand at night confirmed by clinical interview. At 1 year of follow-up the main outcome of interest was onset of symptoms among participants who had no or minor symptoms at baseline.

Results: The overall self-reported prevalence of tingling/numbness in the right hand at baseline was 10.6%. The interview confirmed that prevalence of tingling/numbness in the right hand at baseline was 4.8%, of which about one third, corresponding to

Carpal tunnel syndrome due to keyboarding and mouse tasks: a review

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Abstract

So far, many different studies have examined possible implications of typing related posture and activity on carpal tunnel syndrome (CTS) incidence. Although they tend to present the findings as very apparent ones, assessing the complex relationships between the different causal factors implicated in keyboarding and in the usage of pointing devices, on the one hand, and work related upper extremity disorders (WRUED), especially CTS, on the other hand, is problematic. The aim of this review paper is to outline relevant information about CTS risk factors present in data entry task and their implications, with a special emphasis on different extreme postures determined by conventional and alternate keyboards, pointing devices and their role in the development of CTS. Secondly, a comparison of several

The Effect of Computer Use on Carpal Tunnel Syndrome

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Abstract—Carpal tunnel syndrome (CTS) is the most prevalent of all repetitive strain injuries (RSIs). The Bureau of Labor Statistics [1] determined that there was an average of 26,972 reported cases of CTS annually, between the years 1992 and 2006, in private industry. To understand the effects computer use has on CTS, it is necessary to identify the movements involved in performing everyday tasks such as typing and mouse usage. Motion analysis techniques were employed to determine these movements while performing a computer task. This involved markers being placed on the knuckles, wrists and forearms of the participants. The configuration of the markers allowed for the flexion, extension, radial deviation and ulnar deviation of the wrist to be calculated. The results were categorized in one plane of motion with 20° extension being the most prominent wrist posture. The most common position in two planes was also calculated with an EX20/Ulnar15° (20° extension and 15° ulnar deviation) accounting for over 3.5% (3.6%) of the total wrist posture during the task. This study determined that the most

involved in performing everyday computer tasks. The most common of these are typing and mouse usage. These activities cause a deviation of the wrist from its neutral position. It has been shown that movement of the wrist away from the neutral position increases the pressure within the carpal tunnel [2–4]. If this pressure exceeds the critical pressure threshold stated by Werner *et al.* and Keir *et al.* [5, 6] for a prolonged period of time, the median nerve may become damaged. However, studies performed to date do not account for a combination of both radial/ulnar and flexion/extension movement.

Prior to evaluating the effect movement of the wrist in two planes has, the most common wrist positions from performing computer tasks must be identified. Once this is achieved, the impact these movements have on the carpal tunnel and its contents can be analyzed.

研究表明，键盘操作中腕管压力增高是导致腕管综合征的主要原因。而导致腕管压力增高的主要原因是键盘操作中腕关节的外展动作。

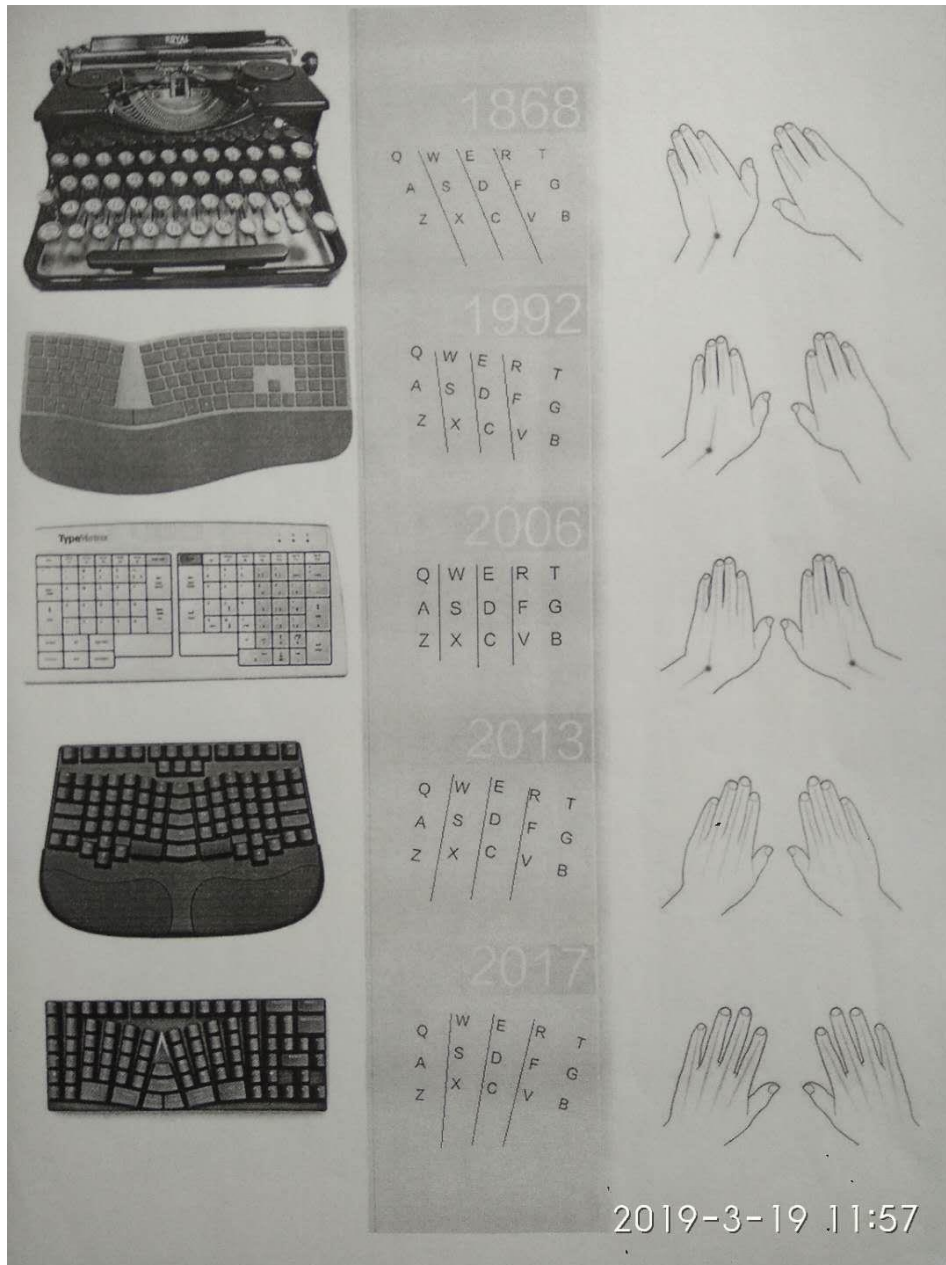
为什么键盘操作时腕关节会频繁外展？



一是键盘左手键区的按键，纵向的排列方向与左手手指的自然伸展方向相反。

二是回车键、退格键、Shift 键等常用按键位于周边，敲击这些按键时腕关节会外展，腕关节尺骨侧偏离角度通常会超过 15°~20°，此时腕管压力会增高 20~50 mm Hg。

纵观二十余年人体工学键盘这个概念的产品，你会发现按键位置的演变趋势或者说方向，也是让按键沿着手指自然伸展方向排列。

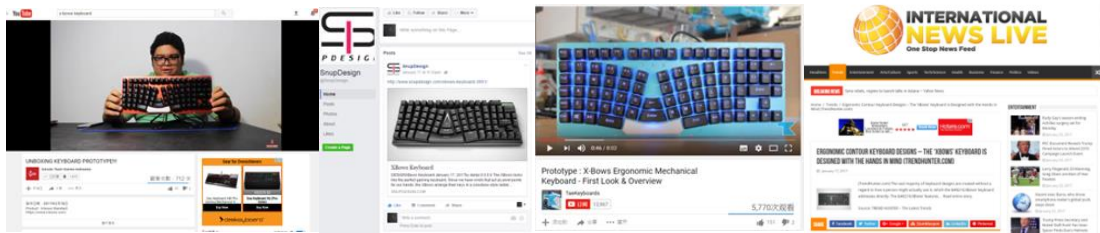


上图中最后一个键盘就是王医生设计的 X-BOWS 人体工学键盘，2017 年初，设计图稿被顶级设计网站 YANKODESIGN 发布，并与特斯拉 Y 型号游艇、波音 777、奥迪 Airy 风扇一并被评为 2017 年 1 月份最受欢迎的设计。

<https://www.yankodesign.com/2017/02/03/most-buzzed-designs-of-january-2017/>



2017年2月份，简陋的手工原型机在海外测评也获得了一致好评。



2017年9月小批量试产，在Kickstarter发起众筹，获得US\$336,310的成绩，和海外媒体的一致评价。



但众筹成功了，代工厂却倒闭了。

后来在佳达隆和极客定制的鼎力帮助下，2018年8月86键人体工学键盘终于量产成功，众筹用户的反馈让王医生觉得所有的坚持和付出都是值得的！



但是当初委托原代工厂开模的 86 键+22 键磁吸套装在结构设计上存在一些问题和隐患。把有设计瑕疵的产品交付用户是王医生无法忍受的事，毅然决定重新开发。

扛着套装众筹用户的催促和资金的压力，重新对键盘进行了新的设计，过程并不顺利。

直到 2019 年 4 月，王医生组建了自己的开发团队。重新设计、开模，优化整个供应链，于 2019 年 9 月份终于完成了磁吸套装以及 Knight 系列全金属键盘，X-BOWS 86 键人体工学键盘，实木 67 键双模键盘和全新 OEM 高度双色注塑球帽等产品的设计，模具制造和试产。11 月份成功小批量投产。

2020 年初再次携手佳达隆和极客定制，原创 OEM 高度双色注塑球帽和各款键盘将全面量产。