

BAB 6

KESIMPULAN

Dari penelitian dapat disimpulkan bahwa :

1. Teknik mendesain *3D CAD outsole Shoe Orthotic* didapatkan metode *Curve Base Surface Modeling* pada menu *software* PowerShape 2016. Karena metode tersebut dapat diproses langsung dengan *software* PowerMill 2016.
2. Desain *3D CAD Outsole Shoe Orthotic* dapat dikerjakan dengan baik pada mesin CNC YCM EV1020A dengan menggunakan material berbahan *polyuretane* melalui beberapa proses percobaan permesinan dan simulasi pada *Software* PowerMill 2016.
3. Pemilihan strategi permesinan yang terdapat pada *software* PowerMill 2016 di dapatkan melalui beberapa percobaan simulasi dan permesinan outsole. Proses manufaktur pada mesin CNC YCM EV1020A menggunakan strategi *steep and shallow finishing* pada kondisi *spindel speed* 6500 rpm, *StepOver* 0,37 mm, *feed rate* 1200 mm/min dengan statistik *toolpath* simulasi di *PowerMill* 2016 sebesar 55 menit 12 detik pada bagian atas, dan 1 jam 19 menit 10 detik pada bagian bawah dapat menghasilkan kualitas permukaan yang lebih baik dibandingkan dua *strategy* lainnya.

Berdasarkan *strategy* tersebut didapatkan sepasang produk *outsole shoe orthotic* yang sesuai dengan bentuk *insole shoe orthotic*. Hasil ini diharapkan dapat menjadi dasar penelitian lanjutan bagi peneliti berikutnya yang ingin mengembangkan proses desain manufaktur sepatu *orthotic (insole dan outsole)* khusus untuk pasien yang mengalami kelainan bentuk kaki.

SARAN

Perlu dilakukan penelitian lanjutan untuk mendapatkan bentuk *outsole* yang lebih ringan dan *fleksibel* sehingga dapat menjadi lebih efisien dan efektif dalam proses machining di mesin CNC.

Perlu dilakukan penelitian lanjutan mengenai proses *wrapping* dengan tekstur berbeda untuk melihat pengaruh gesekan yang terjadi saat penggunaan *outsole* oleh pasien.



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Lampiran 1 : NC-Code Outsole bagian kiri atas

%
N10 G21
N11G0G17G40G49G80G90
N12 T4 M6
N13G0 G90G54 X0 Y0 S6500 M3
N14(=====)
N15(TOOLPATH : F U)
N16(ALLOWANCE : +0)
N17(=====)
N18 G0
N19 X0 Y0
N20 G43 Z10.0 H04
N21 X3.966 Y124.026
N22 Z-5.636
N23 G1 Z-7.636 F3000
N24 X3.965 Y124.14 F1200
N25 X3.962 Y124.337
N26 X3.963 Y124.455
N27 X3.968 Y124.526
N28 X3.981 Y124.735
N29 G0 Z-4.559
N30 G1 X4.167 Y124.565 F9999
N31 G0 Z-5.684
N32 G1 Z-7.684 F3000.
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N9758 X-1.426 Y-66.913
N9759 X-1.573 Y-65.611
N9760 X-1.66 Y-64.879
N9761 X-1.766 Y-64.15
N9762 X-1.843 Y-63.74
N9763 X-1.892
N9764 X-2.1
N9765 G0 Z10.0
N9766M05
N9767 G91 G28 Z0
N9768 G28 X0 Y0
N9769 M30
N9770%

Lampiran 2 : NC-Code Outsole bagian kiri bawah

%
N10 G21
N11G0G17G40G49G80G90
N12 T3 M6
N13G0 G90G54 X0 Y0 S6500 M3
N14(=====)
N15(TOOLPATH : F L)
N16(ALLOWANCE : +0)
N17(=====)
N18 G0
N19 X0 Y0
N20 G43 Z10.0 H03
N21 X4.946 Y119.975
N22 Z-21.865
N23 G1 Z-23.865 F3000
N24 X3.99 Y120.35 Z-23.992 F1200
N25 X3.528 Y120.531 Z-24.053
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N642 X-20.885 Y-93.446
N643 X-20.73 Y-93.561
N644 X-20.539 Y-93.693
N645 X-20.465 Y-93.754
N646 X-20.453 Y-93.78
N647 X-20.436 Y-93.818
N648 X-20.399 Y-93.901
N649 X-20.373 Y-93.945
N650 X-20.342 Y-93.987
N651 X-20.276 Y-94.061
N652 X-20.238 Y-94.097
N653 X-20.088 Y-94.199
N654 X-20.069 Y-94.211
N655 X-19.189 Y-94.755
N656 G0 Z10.0
N657M05
N658 G91 G28 Z0
N659 G28 X0 Y0
N660 M30
N661%

Lampiran 3 : NC-Code Outsole bagian kanan atas

%
N10 G21
N11G0G17G40G49G80G90
N12 T4 M6
N13G0 G90G54 X0 Y0 S6500 M3
N14(=====)
N15(TOOLPATH : F U)
N16(ALLOWANCE : +0)
N17(=====)
N18 G0
N19 X0 Y0
N20 G43 Z10.0 H04
N21 X50.345 Y-31.138
N22 Z-5.823
N23 G1 Z-7.823 F3000
N24 X50.379 Y-30.673 F1200
N25 X50.44 Y-30.053
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N8546 X-0.436 Y45.984
N8547 X-0.362 Y45.293
N8548 X-0.263 Y44.664
N8549 X-0.185 Y44.289
N8550 X-0.145 Y44.132
N8551 X-0.09 Y43.981
N8552 X-0.03
N8553 X0.97
N8554 X1.145 Y43.973
N8555 G0 Z10.0
N8556M05
N8557 G91 G28 Z0
N8558 G28 X0 Y0
N8559 M30
N8560%

Lampiran 4 : NC-Code Outsole bagian kanan bawah

%
N10 G21
N11G0G17G40G49G80G90
N12 T3 M6
N13G0 G90G54 X0 Y0 S6500 M3
N14(=====)
N15(TOOLPATH : F L)
N16(ALLOWANCE : +0)
N17(=====)
N18 G0
N19 X0 Y0
N20 G43 Z10.0 H03
N21 X8.41 Y-62.408
N22 Z-6.839
N23 G1 Z-8.839 F3000
N24 X8.198 Y-62.283 F1200
N25 X8.024 Y-62.204

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N8181 X14.534 Y-75.551
N8182 X14.654 Y-75.652
N8183 X14.706 Y-75.797
N8184 X14.78 Y-75.933
N8185 X14.922 Y-76.136
N8186 X15.038 Y-76.299
N8187 X15.386 Y-76.769
N8188 X15.481 Y-76.892
N8189 G0 Z10.0
N8190M05
N8191 G91 G28 Z0
N8192 G28 X0 Y0
N8193 M30
N8194%